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PHOTOGRAPHY AS APPLIED TO THE STUDY OF BOTANY.

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PHOTOGRAPHY during the past few years, has grown into popular favor as an amusement for idle hours, one that can be highly enjoyed in summer holidays, and the camera has, with many, taken the place of the rod and gun.

This popularization of the use of a strictly scientific instrument is due mainly to improvements in photographic processes, which enable one, with no chemical knowledge and little manipulative skill, to produce at least passable pictures. Following these improvements have naturally come into the market, inexpensive portable apparatus of reasonably good quality. Still, to the great mass of people, photography appears as mysterious and difficult as ever; and even many skilful amateurs seem little impressed with its value save as a means of preserving mementoes of persons and places.

Having used the camera considerably in the study of medicinal plants, I shall endeavor to point out in a few short articles how it may be made useful to students, especially of medicine and pharmacy.

It requires no argument to prove that plants cannot be satisfactorily studied in the mutilated condition in which we find them in drug stores. Even well-preserved herbarium specimens are but poor substitutes for living plants. Careful drawings assist materially, but they are made only by skilful hands, and even then often fail to more than suggest the action, as artists call it, of the living specimen. In this last respect, photography leaves nothing to be desired; as also in affording faithful representations of delicate and changeable structures.

First of all we require to consider the question of

APPARATUS.

Most manufacturers of photographic apparatus, who cater to the tastes of amateurs, put up complete outfits, comprising everything necessary to the production photographic prints. Such outfits commonly consist of a camera, with portable tripod, plate holders, plates, developing trays, and the necessary chemicals for developing the plates and printing proof, together with a light box or telescopic case, in which the whole may be carried in the hand. Those at present furnished by reliable manufacturers are marvels of convenience and cheapness, and almost any of them, with slight modifications, may be made to serve our purpose.

The camera is commonly made to receive a 4x5 or a 5x8 inch plate, these being the sizes of pictures most popular among amateurs. Of the two, the larger size is preferable, since, without being much heavier, it enables one to take either large or small pictures as desired, for the 5x8 inch plate-holder may be readily arranged to receive smaller plates also.

For all ordinary purposes the simple camera shown in Fig. 3 will be sufficient. It consists of two boxes connected by a bellows; the front box, bearing the lens, is securely fastened to a light but strong frame, which, at the time of use, is screwed upon the tripod. Along this frame moves the second box, having at its base a binding screw, by which it may be securely fixed at any desired point. The back of this box is closed by a frame inclosing ground glass. In some cameras this frame rests upon two pegs at the base, from which it is removed and laid aside after focussing the lens; in others it is held by hinges, permitting it to be turned down out of the way after focussing. Of the two modes of attaching the ground glass, I prefer the latter as being more convenient and less conducive to accidents.

This is the simplest and cheapest form in which a camera can be made, and, provided it be well made, it will answer the purposes to which I shall invite the reader's attention. The boxes and bellows must be absolutely light-tight, so that when the ground glass is removed and the plate-holder inserted in its place, not the faintest ray can anywhere penetrate, save through the lens. The movable portion of the camera should be capable of easy, steady, and accurate motion. Such cameras are commonly made of light, well-seasoned wood, and are painted of a dead black within, while the outside is either blackened or stained.

If I were sure the reader could always be satisfied with the absolute necessaries of life, I might stop here in the description of cameras and not mention the more costly, luxurious ones. But as I write mainly of my own experience, I assume that others will have similar experiences, and after the necessaries, yearn for the luxuries, hence I shall make brief mention of some of them.

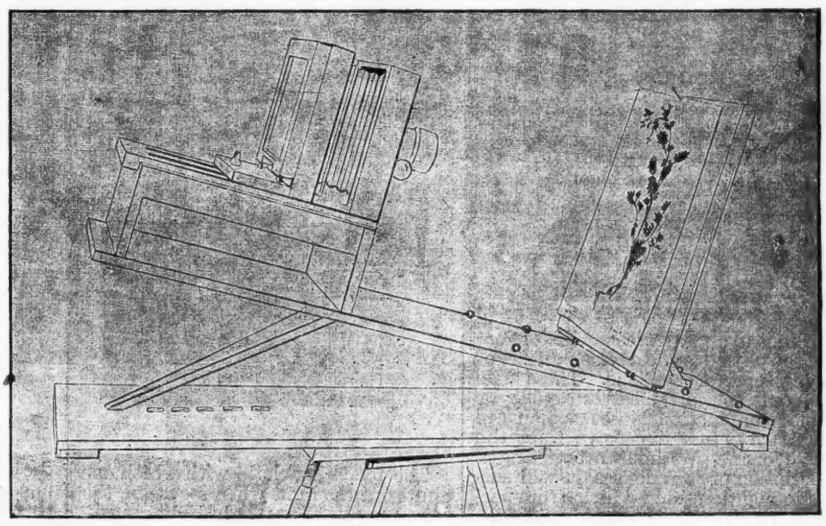


Fig. 1.—Apparatus for photographing plants.

First of all, there is the *swing-back* (Fig. 5). With the camera described above, one can make good pictures of objects at right angles to the plane of vision, provided the field be limited and the lens be focussed upon or near its centre; but if a portion of the object present receding lines, there will be more or less distortion. This distortion is in a great measure prevented by the swing-back, a movable part of the rear box of the camera, by means of which the portion of the plate receiving the image of the receding object is carried a short distance farther from the lens, and thus this section of the picture made a little larger than it otherwise would be, and hence better proportioned. In photographing buildings at short range, the swing-back is absolutely necessary, since the upper parts are considerably farther away from the camera than the lower, and would be distorted in the picture unless corrected. So in photographing plants at short range—and most plants must of course be photographed in this manner—I have often found the swing-back very convenient, if not almost indispensable. Hence I would advise the beginner in photography to obtain a camera with this attachment; the slightly increased expense is of small mo-

ment compared with the added convenience and efficiency of the instrument.

The front or face of the camera bears the lens through which the light enters, and works its wonders upon the sensitive plate. As this is the most important part of the whole apparatus, it requires more than a passing mention. The lens furnished with the ordinary amateur outfit is what is known as a single combination lens that is, one composed of a single piece each of flint and crown glass cemented together. This is mounted in a metal tube which screws into a collar attached to the front of the camera. A little in advance of the lens is placed a diaphragm which admits light through only the central portion of the lens, thus reducing the spherical aberration, but not correcting it entirely. Such a lens does fair work in landscape photography, where slight distortion passes without notice, but for the work we are considering, it is scarcely appropriate. We wish all the lines to appear without distortion, and the objects as nearly as possible of their proper proportions. These ends can only be attained in double or triple combination lenses which are necessarily more expensive than the single ones. Without attempting a description of such lenses, it will suffice to mention some which, from personal experience, I can confidently recommend. The Dallmeyer and the Morrison lenses are certain to give satisfaction. With the latter I have made a photograph in sections through an arc of 180°, the different sections matching perfectly without the slightest signs of distortion. But these lenses are expensive, and, on this account, may not be desired. In this case I can recommend the imitation Dallmeyer as one very satisfactory in its workings, and as good a cheap lens ($8.00 or $9.00) as I am acquainted with. It is a very rapid lens, that is, requiring very short exposure, and when a small diaphragm is used, reasonably free from distortion.

To conclude this part of the subject, then, I would advise the student to procure an "outfit" complete, whether for 4x5 or 5x8 plates, since the whole outfit can be procured more cheaply this way, and then add to it a Dallmeyer, Morrison, or imitation Dallmeyer lens, being guided in his choice of the lens by the condition of his purse.

As to the plate-holder (Fig. 6) little need be said, since one will naturally take those furnished with his outfit. I have, however, found great satisfaction in those having one side of the slides silicated (Fig. 11) so as to admit writing notes of the subject, exposure, etc. This is of ten a very great convenience, and may be the means of preventing the exposure of a plate a second time.

Regarding the tripod (Fig. 8), it is only necessary to say that it should, as a first requisite, have firmness; and next, be as light as possible.

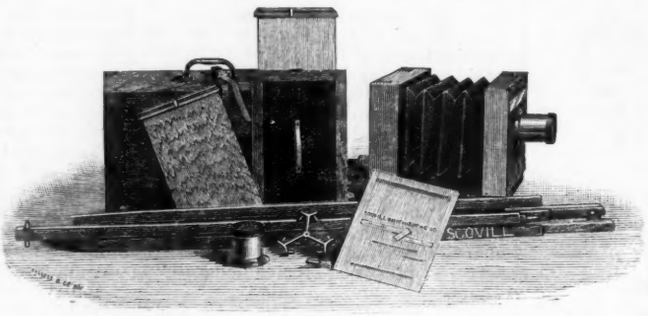


FIG. 2.—Camera, plate-holder, tripod, etc., as furnished in ordinary amateur outfits.

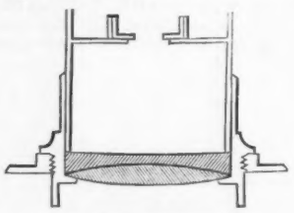


FIG. 3.—Single combination lens.

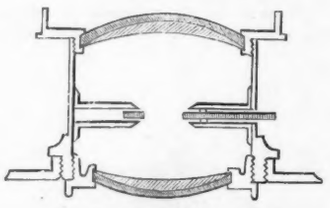


FIG 4.—Double combination lens.

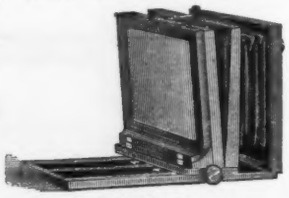


FIG. 5.—Swing-back camera.

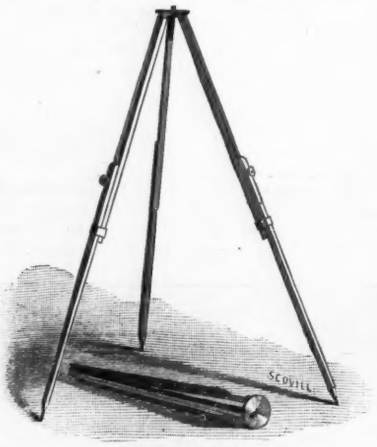


FIG. 8.—Tripod.

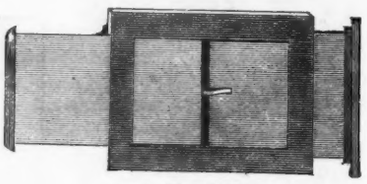


FIG. 6.—Plate holder.

FIG. 10.—Developing dish.

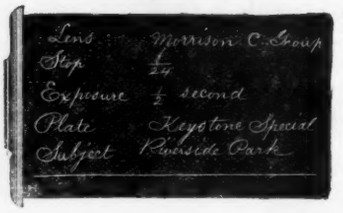


FIG. 7.—Silicated slide of plate holder.

FIG. 9.—Lens tube and cover.

The focussing-cloth, with which one shuts out the light when focussing the lens, may be of any light-tight material; it is, however, commonly of black rubber-cloth.

For the process of developing plates there are commonly supplied with amateur outfits two or three japanned iron pans (Fig. 10), which answer for the purpose, though those made of gutta-percha or hard-rubber are much more serviceable. Sooner or later the iron rusts beneath the varnish, causing the latter to flake off. In this case one can temporarily repair the damage by scraping away the rust and applying another coat of varnish; but when much rusted, it is better to throw them away and get new ones.

The development of dry-plates after exposure as well as fitting them into the plate-holder before exposure, must be done by *ruby-red* light. Lanterns of various forms have been devised to afford such a light, one of which is shown in Fig. 11. Such a lantern is very convenient, but not absolutely essential. I commonly work with an ordinary Argand gas-burner having a ruby chimney, the upward rays of white light being intercepted by a blackened tin shade. A wooden box with a plane of ruby glass set in one side, in which a candle or kerosene lamp may be set answers admirably. Small holes bored on one side near the base and a large one at the top, will afford sufficient air for combustion, and prevent overheating. Of course, these holes must be so shaded as not to permit the escape of white light. The large one at the top, for instance, may be covered by a tin can with small holes punched on one side in the manner of old-fashioned tin-lanterns. A little ingenuity will thus enable one to supply himself with the requisite at very little cost.

A negative-rack (Fig. 12), on which to drain and dry negatives, a printing-frame (Fig. 13), and a broad, soft brush (Fig. 14) should also be included in the outfit.

In photographing small plants or parts of plants, I have found the apparatus shown in Fig. 1 very convenient. Two boards, three and one-half feet long and ten inches wide, are united by hinges at one end. Near the other end a stick, hinged to the upper board, rests upon the lower, fitting into holes so as to permit raising or lowering to any angle desired. On the free end of the upper board is erected a frame to hold the camera, the remainder of the board being occupied by small screw-eyes placed in two rows at equal distances from each other. A frame, one and one-half by one foot, covered with gray drilling—a common canvas stretcher does admirably—with two screw-eyes at the bottom, and a wooden rod to pass through the screw-eyes of the board and those of the frame, complete the apparatus. To the bottom of the frame, however, there should be attached a block (not shown in the cut), resting on the board and serving to keep the frame always in a perpendicular position.

In using the apparatus, the plant to be photographed is attached to the cloth on the frame by pins or thread, and then the latter is placed at the desired distance from the camera, and fixed by sliding the rod through the screw-eyes.

(To be continued.)

[ORIGINAL COMMUNICATION.]

FILTERING SYRUPS.

MUCH trouble is usually found in filtering syrupy and mucilaginous preparations by the pharmacist, and he is frequently under the necessity of "repacking the filter" or wait an indefinite length of time for his preparation to filter, thereby causing a great loss by evaporation of all the volatile parts of the preparations. I have had a tin filter made which is very simple, but which works very rapidly, and entirely satisfactorily. It is made about two inches in diameter, larger than the top diameter of the ordinary half gallon glass funnel, cylindrical, with sides about eight inches high, provided with a tight-fitting cover. On the bottom is a flange about one inch wide, made to conform to the inside of the top of the glass funnel, and inside of this flange the bottom is cut out and fine strainer cloth is soldered over it, with two wires running transversely across under the strainer cloth to support it. I now take fine river sand and thoroughly wash it, and after drying it, put about one inch over the bottom of the filter, place the filter on the funnel, put the funnel on the filter rack, and commence operations. Cough syrups, made up largely from simple syrup with fluid extracts, may be rapidly filtered and satisfactorily done, as well as all other preparations of like character. Many times, in filtering quite a quantity of a preparation, the filter paper would have to be renewed several times, while this simple device will do the work as satisfactorily in half the time.

D. S. WHITE.

FLANDREAN, DAKOTA.

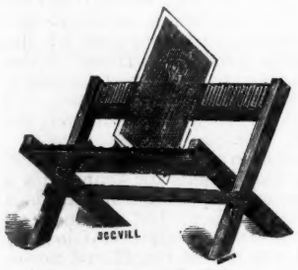


FIG. 12.—Dressing rack.

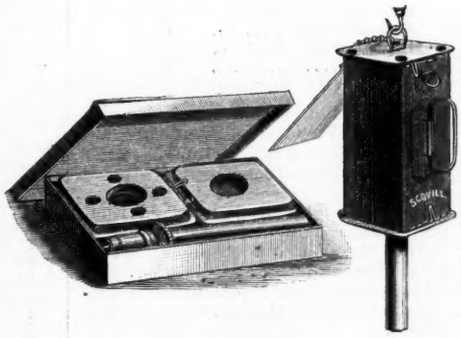


FIG. 11.—Lamp.

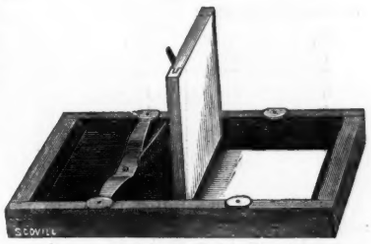


FIG. 13.—Printing frome.

A Harmless Soldering Mixture.

SOME time ago, when experimenting with various chemical substances which might possibly be used for soldering the tin cans in which fish, fruit, and vegetables are now extensively put up, I was led to interrupt my experiments on learning of a mixture which had been suggested for the purpose, which certainly, it seemed to me, satisfied all sanitary requirements, and which was reported to work well in actual practice. As the mixture has been recently patented, its composition is no longer a secret, and I am therefore at liberty to state that it consists of lactic acid and glycerin, the best proportions being one pound of each of these substances with eight pounds of water.

The inventor of the mixture is Abr. C. N. Waite, of Littleton, Mass., but I do not know whether the patent was issued to him or to the Avery Lactate Company. I am informed that the mixture has been tried with success by Messrs. E. T. Cowdry & Co., in canning fish. How many accidents have really resulted in the past from the use of chloride of zinc I do not know, but no one can deny that there is possible danger in its use, and if a harmless substance, such as that mentioned above, can be made to work practically as a substitute, there will be no longer any good excuse for using a dangerous compound.—*Chem. News.*

Improved Powdered Meat.

G. DANNECY, of Bordeaux, was the first who obtained, in 1872, a French patent for preparing powdered meat.

This product, however, like several others of a similar character, labored under the disadvantage of being prepared from fresh meat, and, therefore, liable to contain, and, in fact, not unfrequently containing, the germs of tape-worm, which often resulted from the eating of this kind of food.

Mr. P. G. Dannecy, of Rio de Janeiro, the son of the above mentioned, now publishes the statement that, for some years past, he has modified his father's process by employing enough heat to destroy these germs. The operation is conducted as follows:

The meat is immersed and left for at least one hour in about ten times its volume of boiling water, containing 1 per cent of salt. It is then taken out, allowed to cool, and cut into thin slices (about 3 to 4 millimeters, or ⅛ inch thick). These pieces are dried upon cloths in a well ventilated drying oven, at a temperature of 40 to 50 degrees. After three hours they are sufficiently dry to be rubbed to powder, which may be done in a marble mortar with a wooden pestle.—After *Rép. de Pharm.*, 1885, 52.

FIG. 14.—Dust brush.

The Greek Government and the Quinine Trade.

THE frequency of intermittent fever in Greece led to a proposal on the part of the Greek Government to take the matter in their own hands, and they have submitted to the Parliament a bill to the following effect: 1. The Government shall be entitled to purchase quinine sulphate of the best quality from foreign manufactories, and to retail the same at cost price, to any one requiring it. 2. The retail price, which would vary according to the market price of the article and the cost of carriage and retailing, would be fixed every three months, and the result published in the *Official Gazette*. 3. The cost involved to be borne by the Home Ministry, and the money received to go into the Government Exchequer. 4. The purchase and distribution to be effected by the military authorities. It is stated that the Greek consuls in Germany, France, Austria, and Italy are requested to procure samples of quinine manufactured in those countries, and that these are to be submitted to a Commission of physicians and chemists. The pharmacists in Athens, as is natural, are not in favor of the bill, and have petitioned against it.—*Chem. and Drugg*, March.

ASSAY OF COMMERCIAL PEPSINS.*

THE author first prepared several specimens of pepsin himself, employing various methods:

1. *Scheffer's method.*—The lining membrane of the stomach of a freshly slaughtered pig was dissected off, chopped moderately fine, and macerated in one-half gallon of acidulated water (7½ parts of hydrochloric acid and 500 parts of water), with frequent agitation for seven days. The solution was then poured off, and enough chloride of sodium added to saturate it. The dense curdy precipitate floating on top after twenty-four hours was skimmed off, strongly pressed, after a few days removed, then triturated with 480 grains of sugar of milk, and dried.

One grain of this was able to digest 97 grains of egg-albumen.

A saccharated pepsin prepared from this, by mixing 1 part with 3 parts of sugar of milk, was found of such a strength that one grain digested 68 grains of egg-albumen.

2. *Same process.*—But this was modified by chopping the whole stomach moderately fine. The yield was larger than in the previous operation, and the pepsin was more active, 1 grain of the product digesting 104 grains of albumen. And on further diluting 1 part of the pepsin with 3 parts of sugar of milk, 1 grain of the product digested 71 grains of albumen.

3. *Jensen's Process.*—The stomach was chopped moderately fine, and digested in one-half gallon of acidulated water for six hours at a temperature of 45° C. (113° F.). The peptonic solution thus produced was poured off, allowed to settle, and then filtered. The pale, straw-colored filtrate was evaporated slowly at a temperature of 45° C., until it was of a syrupy consistence, then transferred to a porcelain slab, dried, and scaled off. The resulting preparation was rather unsatisfactory, for on exposure to air for a short time, it absorbed moisture, forming a tough gelatinous mass.

1 grain of this pepsin was found to digest 108 grains of albumen. And on diluting the pepsin with 4 parts of sugar of milk, 1 grain of the product digested 54 grains of albumen.

A saccharated pepsin thus prepared does not keep well. A sample that had been kept but two weeks, wrapped in paper, was damp, badly caked, and had a very disagreeable odor, while other samples, kept in the same manner, but made by different processes, were unchanged.

These three samples and others purchased in the market were then subjected to the pharmacopœial test. As the pharmacopœia gives no directions for the division of the egg albumen, the author adopted the following method in each case. Fresh eggs were dropped into boiling water and allowed to remain ten minutes; they were then removed, cooled, and the whites freed from the shells, membrane, and yolks. The whites were then ground together

* Abstract of a Thesis presented to the Massachusetts College of Pharmacy, 1885, by CHARLES EVERETT COOMBS, PH.G.

thoroughly in a mortar and pressed through a sieve of twenty meshes to the linear inch. This egg albumen was prepared fresh for each experiment.

For convenience and easy comparison, the author divided his samples into three classes:

1. The saccharated pepsins.
2. The scale and stronger pepsins.
3. The digestive compounds of pepsin.

The testing of the samples was carried out in a specially constructed apparatus, being a water-bath with false bottom of wire-netting, upon which the test-vials (6 oz. wide-mouths) rested. Each was closed with a cap of white wrapping-paper held in place by a rubber band. Into each bottle, properly labelled, were weighed, first, 507 grains of acidulated water, and to this was added 1 grain of saccharated pepsin. Next, 75 grains of prepared egg-albumen were added, the bottles covered, placed in the water-bath, and kept at 38°–40° C. (100°-104° F.) for six hours, being shaken in intervals of twenty minutes. The contents of each bottle were then transferred to a close strainer, and the undigested albumen in each case was thoroughly washed, drained, and all of the liquid pressed out until the albumen was as near its original condition as it was possible to get it. The difference in weight (that is, the loss it had undergone) was taken as the amount digested by the sample.*

1 grain each of the following fifteen samples of *saccharated pepsins*, made to act during six hours upon 75 grains of egg-albumen, digested the stated number of grains:

No.	Grains	No.	Grains
1	75	8	65
2	72	9	62
3	71	10	57
4	71	11	54
5	71	12	54
6	68	13	46
7	66	14	43
		15	None

There was a great difference in the action of these samples; some of them began to act in a few minutes, while others were slower. Two samples, in particular, displayed but slight digestive power till the last two hours, and then were very active, so that their final result compared favorably with the others.

Two samples of No. 4 (of the same manufacturer) were tested at the same time. One was seven years old, while the other was comparatively fresh, yet their digestive power varied only 3 grains.

The author next took up the samples of scale and stronger pepsins. And here he obtained results which induce him to discredit the claims made by the manufacturers that their products would digest from 200 to 1,000 grains, respectively, of egg-albumen.

He prepared a saccharated pepsin, by triturating 1 part of the stronger pepsin with 3 parts of sugar of milk, and 1 grain of this digested 71 grains of egg-albumen. Yet 1 grain of the stronger pepsin itself, which should have been supposed to have four times the strength of the trituration prepared from it, and therefore should have digested 284 grains, only digested 104 grains of albumen.

The author found that *the finer the powder the more active is the pepsin.* Samples 1 and 5 in the following list were of the same make, and from the same lot No. 1 was in very fine powder, and 1 grain digested 142 grains of albumen, while No. 5, being in coarse powder, only digested 108 grains.

The test was made as follows: 1 grain of pepsin was mixed with 1,000 grains of acidulated water, and 500 grains of prepared egg-albumen added to it. The larger amount of water was taken in order to cover the albumen. The manipulation was the same as before. After six hours, however, but slight action was displayed by any of the samples. A new series was then prepared, in which only 507 grains of acidulated water and 200 grains of albumen were used, and this time the results were better.

One grain each of the following 12 samples of *scale and stronger pepsins*, made to act during six hours on 200 grains of albumen, digested:

No.	Grains.	No.	Grains.
1.	142	7.	107
2.	130	8.	107
3.	120	9.	104
4.	116	10.	102
5.	108	11.	97
6.	108	12.	86

The digestive compounds of pepsin also examined by the author, which comprise pills and solutions of pepsin, may be omitted here, as the amount claimed by the makers to be present is not always indicated.

A wine of pepsin made from sample No. 1 of the saccharated pepsins above enumerated, and made by the following formula, was found, contrary to expectation, remarkably active:

Saccharated Pepsin	256 grains.
Distilled Water	2 fl. oz.
Hydrochloric Acid	24 min.
Glycerin	1 fl. oz.
Sherry Wine, enough to	16 fl. oz.

One fl. dchm. of this was mixed with 507 grains of acidulated water and 100 grains of prepared albumen. After six hours it had digested 73 grains of the latter.

Of 40 samples of pepsin and their preparations which the author examined, 4 were devoid of peptic action altogether, and of the saccharated pepsins claiming to be "pharmacopœial," 80% answered to the officinal requirements.

BORIC ACID.*

THE author first gives an account of the Italian boric acid industry, and then treats of the American borax sources and their effects upon the importation of the foreign article. We omit the first portion of the paper, and give the more interesting portions of the remainder as follows:

The importation of boric acid into the United States has formerly been very large. The well-known firm of Chas. Pfizer & Co., of New York, has had, previous to 1883, an annual importation of some 200 casks. Boric acid has been used to an enormous extent in the manufacture of borax. At present, however, large quantities of pure borax are obtained from natural sources in this country. It was as early as 1856, when Dr. John A. Veatch discovered borax in Tehama Co., Cal., and since that time the importation of foreign boric acid has steadily decreased and almost entirely ceased. As is well known, all the borax sold in former years in the markets was an artificial combination of boric acid with soda, and the borax trade was a monopoly. Now, in California, we find it in immense quantities in what is called *Clear Lake*, about thirty-six miles from the Pacific Ocean and one hundred miles north of San Francisco, among volcanic rocks. At the lower end of this lake we find sulphur deposited, covering many acres, and from ten to twelve feet in height. A great part of this sulphur has been sold at large profit. By the side of this sulphur-tank is a spring, from which runs a small stream down into Clear Lake. This spring is a saturated solution of boric acid in water, and by simple solar evaporation large quantities of the acid are obtained, and then, by recrystallization, a product is obtained equal to that made in any laboratory. This spring probably has no equal in America or abroad, nothing like it having been recorded. Close beside it is another similar one, but it holds in solution certain impurities, such as magnesium, aluminium, calcium, etc., and to make pure boric acid from it, very careful manipulation is required.

In the National Dispensatory, 3d edit., 1874, p. 1,386, we find the following passage: "Previous to 1880, the importation into the United States of borax amounted to about 3,500 lbs. annually, but in 1880 and in 1882 it exceeded 15,000 lbs., and in 1883 over four and one-third million pounds of boric acid were imported.

But this statement does not tally with other authorities. For instance, the U. S. Dispensatory, 15th ed., 1883, says: "The importation of borax, which formerly amounted to from 600,000 to 1,000,000 pounds annually, has practically ceased, and the American product has been largely exported."

Now, in the new Tariff which was enacted by Congress in the early part of 1883, and which went into effect on July 1st, 1883, a duty of five cents per pound is placed on pure boric acid, four cents on crude boric acid, and three cents per lb. on borate of lime. These heavy duties have excluded these articles from importation, and cause the home demand to be supplied by the Californian product. These duties were supposed to be just and necessary to protect the American industry, but this is untrue as will be seen from the following extracts:

"Borax is so abundant at Columbus, Nevada, that it sells for four cents a pound, at which price it still affords a fair profit. When first produced it brought 30 cents."—(*Boston Journal.*)

"And yet it was considered necessary to protect it by a duty on imported borax, so that the American labor producing it might not be obliged to compete with pauper labor abroad."—(*Boston Herald.*)

The author then discusses the preparation, properties, reaction, etc., of boric acid, and finally appends the following table, obtained from the U. S. Bureau of Statistics, which bears out his statement about the importation of the article.

Statement showing the Quantity and Value of imported Boric Acid, entered for consumption in the U. S., with the rate of duty, and the amount of duty collected thereon, from 1867 to 1884 inclusive:

Year ending June 30.	Boric Acid lbs.	Value $	Duty per lb.	Revenue derived from duty.
1867	770,756	73,396	5 cents	38,537.80
1868	293,993	22,845	5 "	12,199 65
1869	988,033	109,974	5 "	49,401.65
1870	1,166,145	173,806	5 "	58,307.25
1871	1,204,049	185,477	5 "	60,202.45
1872	1,103,974	191,575	5 "	55.198.70
1873	1,222,006	255,186	free	none
1874	233,955	52,752	"	"
1875	41,742	6,280	"	"
1876	137,518	15,711	"	"
1877	107,468	11,231	"	"
1878	178,798	14,925	"	"
1879	306,462	21,888	"	"
1880	243,733	18,473	"	"
1881	187,053	15,771	"	"
1882	536,334	71,343	"	"
1883	4,334,432	580,171	"	"
1884	*a** 42,900	4,193	4 cents	†1,716.01
	b 1,612	301	5 "	†80.58

* *a* denotes the commercial, *b* the pure acid.
† These are the figures in the original document. We should have expected $1,716.00 and $80.60 rectively.

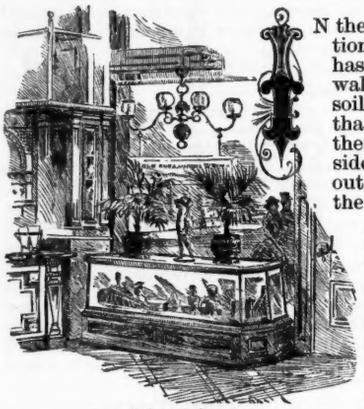
* This is, indeed, the usual method followed by nearly all experimenters, but it is naturally quite liable to give discordant results, as there is never any absolute certainty that the condition (moisture) of the albumen before and after the experiment is the same. Probably the only thoroughly safe method is that of Stutzer (see our last number, p. 84), in which the nitrogen is determined in the albumen. Nevertheless, a *series* of assays made uniformly by the process detailed by the author gives practically useful results.—ED. A. D.

* Abstract of a thesis presented to the Massachusetts College of Pharmacy, 1885, by FRANK H. MORGAN, PH.G.

[Original Communication.]

THE ARCHITECTURE AND ARRANGEMENT OF KELLEY & DURKEE'S DRUG-STORE.

(Continued from page 82.)



One of the window cases.

N the rear of the prescription counter an opening has been made in the wall for placing the soiled dishes, in order that a boy may remove them from the other side for cleansing, without being in the way of the dispensers, while doing so; the opening is closed by a small sliding-door. The chemicals, syrups, tinctures, extracts, etc., which are in greatest demand are placed directly back of the prescription counter. It was necessary to put many of the fluid extracts and elixirs not in active request in drawers; the section marked "drawers for bottles," on the plan of details on page 85, is so used; each drawer will contain twenty pint and five four-ounce bottles. In order to facilitate finding the preparations, the drawers are all numbered and referred to on an alphabetical list of contents. A card catalogue, by which ready reference is made to articles of special interest in pharmaceutical journals, occupies the drawers above the ones last mentioned.

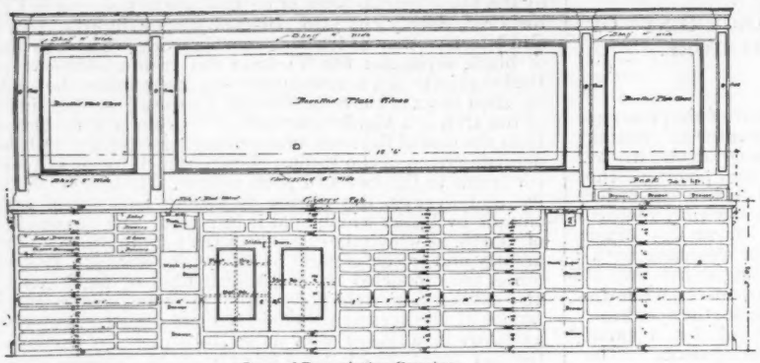
Side cases and counters and the gallery.

The alcove room in the rear of the main store is used as follows: chemicals and alkaloids occupy the closets on each side of the entrance; on the right side of the room two comfortable spring-beds are placed, one above the other, closing in the daytime, something the same as the upper berths in modern sleeping-cars, wardrobes for coats, hats, etc., and the library, protected by glass doors, occupy the remaining space. Several leaves or shelves are arranged to slide out on rests for use as tables or counters in the daytime; at night a carpet is placed on the tile floor for comfort, and a curtain separating it from the store may be drawn. A speaking-tube to basement and front door, two electric call boxes for messengers, and a telephone are placed conveniently.

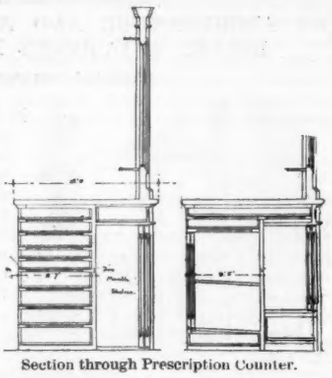
The soda fountain is situated in the corner nearest the front door, and is especially unique, Messrs. Kelley & Durkee having had some ten or twelve designs submitted by different artitects, artists, and apparatus-makers. The one used was drawn by Mr. Rinn, the artist decorator of Boston (see July number). The draught arms, of which there are five, spring from a beveled Mexican onyx, beautifully mottled with bluish-gray, the columns supporting the arch are of California white onyx, brought into contrast by the black marble back of it; the face of the arch is Victoria red, deeply cut into polished diaper figures, a new and effective way of treating marble work. A narrow line of black separates the Victoria red from rosette-carved Italian griotte and a moulding of black separates the white bevelled onyx of the arch from the Victoria red—the inside of the arch is a highly-polished red marble, a little lighter than the face of the arch, but contrasting strongly with the delicate cream of the Italian Sienna, which forms the mirror frame to the bevelled plate mirror. To introduce the ice and syrups, the mirror is swung backwards until caught by hooks which hold it in place. The carved line of marble of which the capitals of the column form a part, greatly add to the general beauty of the design. The columns are supported on a moulded base of black, which also extends across the body of the apparatus, and on which names of the syrups are engraved and gilded. The syrup gates are in a line of very dark Italian griotte, excepting the end gates, which come from block of Pyrenees green, forming a part of the base to the columns.

The gallery is principally used for surplus stock and those goods not often in demand; as it is found difficult to arrange some of the stock in the gallery so as to be attractive, several of the sections are about to be draped inside the glass doors with thin lemon-gold curtains, so as to partly conceal the contents. The entrance to the basement stairs is through the fly-doors in the rear of the prescription counter. A portion of the landing, two steps lower than the main store, is used for a marble wash-bowl and other toilet arrangements. To the left of the landing is a sink provided with hot and cold water for washing the soiled dishes. The fume-closet in the basement at the foot of the stairs is provided with an exceptionally strong draught by being run into and part way up the boiler flue.

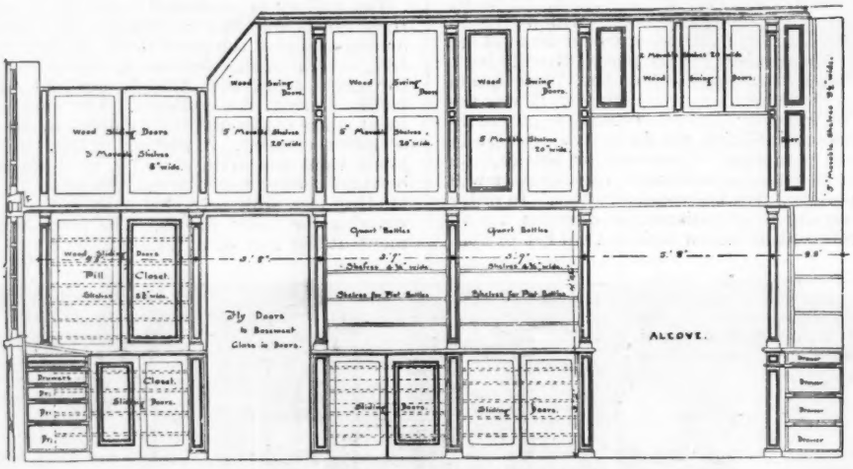
The closet has glass swinging-doors and a variety of gas, water, and steam connections. The cement floor is covered with sheet lead, slanted in such a manner that any liquid accidentally spilled will flow directly into the sewer. The large steam kettle is placed in the closet in order that the odor and vapor may be carried away—a slide in the counter or table to the fume-closet covers the still when not in use, so all the room may be available when needed. A Prentiss' still, with steam attachments, is also used inside the closet. The shelves near are used to hold the following apparatus: still-head, large four-foot Remington condenser, Sparrow mixer, Harris sifter, sieves, hot-filter tank, etc. The laboratory table (not shown) has the top of maple plank, and is about eight feet long and four feet wide, and is fitted with drawers and closets. The permanent furniture of the counter consists of a desk, an Enterprise drug-mill, and a Wiesnegg furnace. Besides the table, three large swinging leaves in other parts of the room, supported on strong legs, give some sixty more feet of room. Over the desk near the door at which the goods are received, the reagents and testing-apparatus are kept. The remaining things in the room are those which are generally seen in laboratories, such as percolators, capsules, etc., etc., excepting a Stanyan



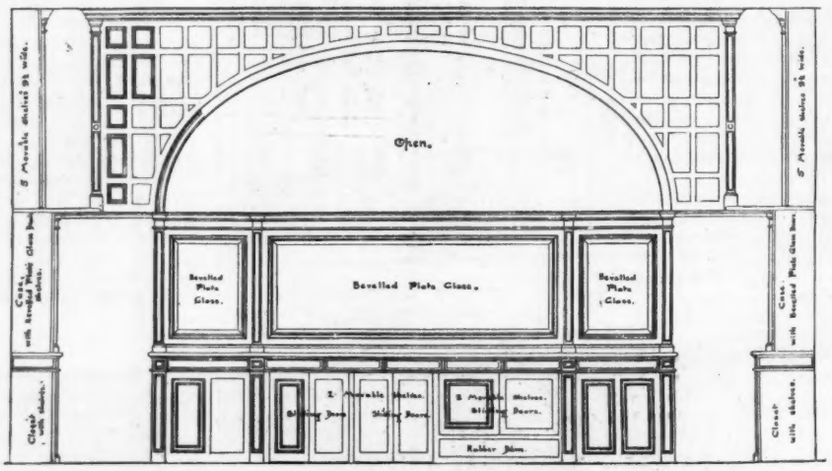
Rear of Prescription Counter.



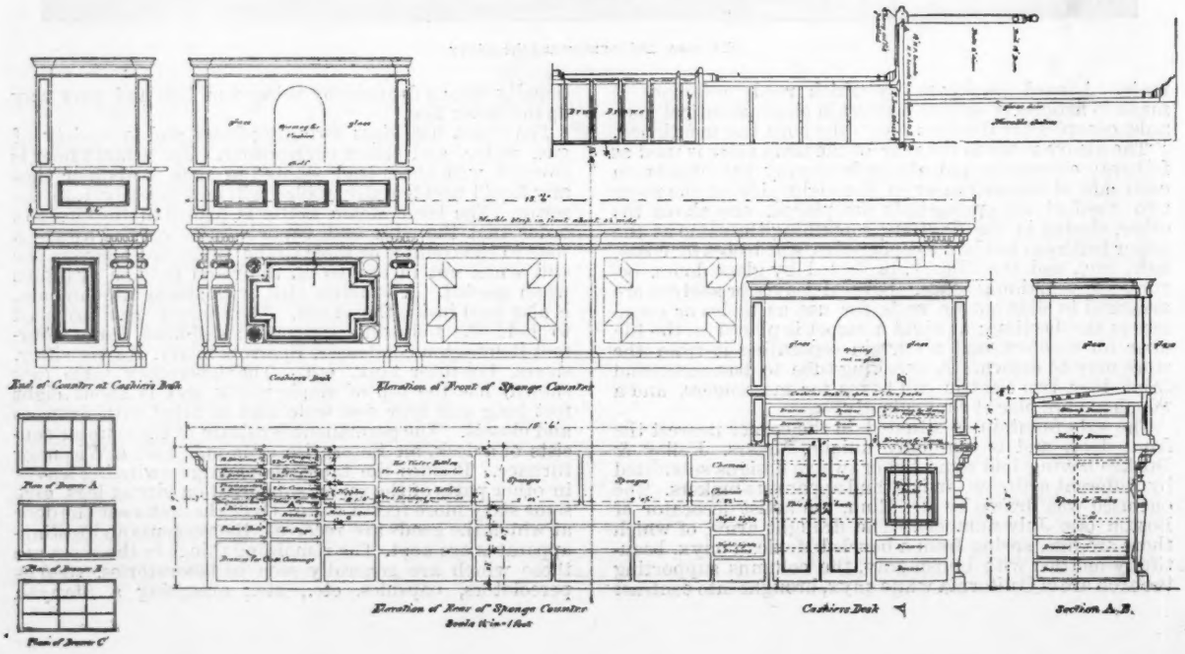
Section through Prescription Counter.



Shelving and Cases at rear of Prescription Counter.



Front of Prescription Counter.


End of Counter at Cashier's Desk
Cashiers Desk
Elevation of Front of Sponge Counter
Elevation of Rear of Sponge Counter
Cashiers Desk
Section A.B.
Plan of Drawer A.
Plan of Drawer B.
Plan of Drawer C.

mixer for stiff pastes, and a new bottle-washing attachment which sends a fine and forcible stream of water into a bottle when it is pressed down upon it, cleaning very dirty bottles quickly, thoroughly, and with the expenditure of a small quantity of water.

(To be continued.)

Oil of Rose.

ONE of the characteristic tests for the genuineness of oil of rose has been considered its property of separating, when slowly cooled to near 10° C (50° F.), a crystalline stearopten, free from oxygen. Though the percentage of this stearopten contained in the oil has been known to vary greatly, probably between 4 and nearly 70 per cent (Hanbury, "Science Papers," 1876, 171), yet, until within a short time ago, it was never found entirely absent in any oil of rose claiming to be genuine. Lately, however, Mr. Helm reported having met with reputedly genuine samples containing none of this stearopten at all.

Prof. Flückiger, who has chosen this statement as the subject of one of his recent papers (*Arch. d. Pharm*, 223, 185), reports that he himself had never met with such an oil, but does not consider its occurrence as at all impossible, since it is well known that probably *all* the oil of rose of the Turkish market, even that obtained from the most reliable houses at Constantinople, is adulterated. Possibly some of the additions were copious enough to prevent any separation of the stearopten.

A sample of genuine Turkish oil of rose, obtained by the agent of Schimmel & Co., of Leipzig, at Kazanlik, personally, was found by Prof. Flückiger to contain 9.20% of the stearopten. Moreover, while the absolute genuineness of even this sample of oil may still be doubted, a positive proof is offered by the fact that oil of rose distilled by Schimmel & Co. from roses grown near Leipzig was found to contain 28.80% of the stearopten.

After all, it seems that the requirements of the pharmacopœia coincide with the possibilities and facts; but it may nevertheless be advisable to take into consideration the anomalous fact observed by Mr. Helm.

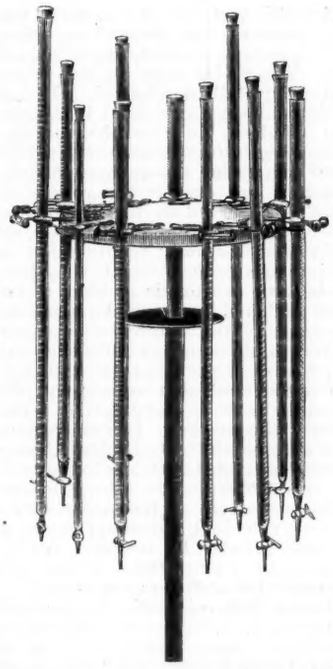
New Process for Preparing Chlorate of Potassium.

CHLORINE gas is conducted through milk of magnesia, and the resulting solution evaporated to 35°-30° B., until a portion of the chloride of magnesium begins to crystallize out. This concentrated solution is now mixed with chloride of potassium (obtained from the Stassfurt potash mines), and the resulting products are chlorate of potassium and chloride of magnesium. The larger portion of the chlorate of potassium crystallizes out. The remaining mother-liquid contains only 5 to 10 per cent of the total quantity of the chlorate, which it does not pay to extract. It is then further treated with hydrochloric acid and steam, whereby the chlorate is made to give off chlorine gas, which is absorbed by magnesia or lime. The residue, containing an excess of hydrochloric acid, is neutralized with carbonate of magnesium, and consists now of a solution of chloride of magnesium contaminated with a little chloride of potassium. It is evaporated to 45° B., allowed to cool, and to become solid. This soliidified magnesium chloride may either be sold as such, or may be reconverted into magnesia by driving off the chlorine with heat, when the magnesia may be again used in the next operation. This process has been patented by E. K. Muspratt, of Seaforth Hall, and G. Eschellmann, of Widnes.

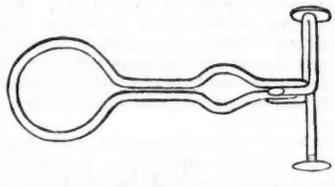
[ORIGINAL COMMUNICATION.]

ROTARY BURETTE HOLDER.

ONE of us for some time past has used a rotary burette holder, which is very convenient, when several assays are to be made one after another, involving the use of different test-liquids. The apparatus which we have constructed for ourselves is a circular board with a smooth central brass plate at its lower surface, from the middle of which proceeds a smooth iron rod, which is inserted into a piece of iron pipe provided with a brass shoulder and screwed into a firm base. One of Dr. Squibb's retort stands, cut off to a suitable height, will answer well. A thread is cut on the upper end of the pipe, and an ordinary coupling, to which the brass shoulder is soldered, is screwed upon it. The circular board, therefore, revolves smoothly upon the brass shoulder. In the illustration, the board carrying the burettes has been purposely raised



up to show the rod and the shoulder upon which the board revolves. The burettes are held by clamps resembling ordinary pinch-cocks, so arranged that they will be able to grasp



the burettes firmly. One of these is shown in the above cut. The feature of the turn-table afforded by G. Hoppe's apparatus, previously described, may easily be combined with the rotary burette-holder, which may be of occasional advantage.

SYRUP OF THE PHOSPHATES of Iron, Quinine, and Strychnine, with Assays of Samples.*

THE author first quotes the various names under which this preparation is known, which are—besides the officinal one—Easton's Syrup, Aitkin's Syrup, Syrup of the Three Phosphates, and Syrup of Triple Phosphates.

He next gives a detailed account of the various formulæ formerly proposed for preparing this syrup, and discusses their merits or disadvantages. He points out that the strength of the product, prepared by what is known as Aitkin's and Easton's formulæ, does not correspond with the proportion of the ingredients claimed for it, since the several operations of mutual decomposition (to produce the ferrous phosphate), or precipitation, introduce discordant results. Moreover, he finds, as many others have before him, that the finished preparation does not keep well, becomes dark colored and eventually deposits a sediment, probably due to oxidation of the iron salt, and to some action of the phosphoric acid upon the sugar or its coloring matter.

He finds the new officinal process (U. S. Pharm., 1880) to be the most satisfactory. With a view to devise a systematic process of assay for this preparation, he first made a sample of the syrup from standard ingredients prepared with the greatest care by himself. [The author gives the methods by which he prepared every ingredient and tested its purity and conformity to pharmacopœial requirements. But owing to want of space, we are compelled to omit this and other interesting portions of the thesis.]

The method of assay adopted by the author was the following: The alkaloids, quinine and strychnine were precipitated in a weighed portion of the syrup diluted with an equal volume of water, by means of soda. The mixture was then shaken with three successive portions of chloroform, the chloroformic layers united and evaporated, and the residue dried at 212° F. This was then weighed as "total alkaloids."

These mixed alkaloids were treated with ether three times in succession; whereby all the quinine was dissolved, and the strychnine nearly all remains behind. [Strychnine requires about 1,250 parts of ether for solution.] The residue of the ethereal solution is weighed as quinine.

The liquid from which the alkaloids were separated is next evaporated to dryness, and the dry residue ignited until it forms a grayish-white mass on cooling. The slowly cooled residue is treated with hydrochloric acid and then filtered. In the filtrate, the iron is precipitated by ammonia, and the precipitate thoroughly washed and ignited. This gives the weight of ferric oxide.

The free phosphoric acid is determined in a separate sample of the syrup, diluted with water, by adding test-solution of magnesium [U. S. Ph., p. 392], collecting the precipitate after twelve hours' washing, drying, and igniting. From the residue, which is pyro-phosphate of magnesium, the amount of phosphoric acid is calculated.

The results obtained by the author, in 13 commercial samples of syrups, are appended in tables, from which we gather the following:

A standard syrup, prepared by the author himself, was found to yield in 20 grammes:

	Gm.
Total Alkaloids	0.274
Quinine	0.269
Strychnine	0.005
Ferric Oxide	0.0546
Phosphoric Acid (P_2O_5)	0.513

[The latter calculated from the author's figures.]

The commercial samples varied greatly, the extremes being in 20 Gm. of the syrup:

	Highest.	Lowest.
Total Alkaloids	0.295	0.175
Quinine	0.295	0.173
Strychnine	0.014	0.005
Ferric Oxide	0.1998	0.0476
Phosph. Acid (P_2O_5)	0.482	0.2376

[The latter calculated from the author's figures].

* Abstract of a thesis presented to the Massachusetts College of Pharmacy, 1885, by JOSIAH CLIFTON CUTTING, PH.G.

Toughened Filter-papers.

In attempting to prepare pyroxylin filters, the writer found that paper was remarkably toughened by the action of nitric acid, the product being pervious to liquids, and quite different from parchment-paper made with sulphuric acid. Simple immersions in, or mere moistening with nitric acid of density 1.42, and subsequent washing with water, are sufficient to produce the effect, and no particular precautions are necessary.

The toughened paper can be used like the ordinary kind, filtration being but little retarded, whilst the closeness of its texture and the absence of all pinholes render its action efficient. It can be washed and rubbed without damage, like a piece of linen, and is therefore likely to prove useful for the collection of substances that have to be removed from the filter whilst wet. Comparative trials were made of the strength of wet Swedish paper before and after being toughened. A strip of each, 25 Mm. wide, was made into a loop, and the ends held in a vertical clamp; through the loop was passed a glass rod 5 Mm. in diameter, to which by strings at each end a scale-pan was attached. Ordinary filter-paper broke with a weight that varied from 100 to 150 grammes, whilst the toughened paper bore a weight of about 1.5 kilos before it gave way, and is therefore more than ten times as strong as the other. In consequence of its great tenacity, the toughened paper can be used in ordinary funnels with the vacuum pump.

Several trials were made, and it was found to bear the greatest pressure produced by the pump employed (a common exhausting syringe), whilst a single stroke of the piston broke the ordinary paper. The treatment with nitric acid producing but little change in texture, the toughened paper fits sufficiently close to the funnel to prevent undue access of air, and is therefore not open to the objection made against the parchment filters recommended by Tichborne (*Pharm. J. Trans.*, 1871, 881). An admirable way of preparing filters for the pump is to dip only the apex of the folded paper into nitric acid, and then wash with water; the weak part is thus effectually toughened, whilst the rest remains unaltered.

The paper contracts in size under the treatment, and the ash is diminished. Thus circles, 11.5 Cm. in diameter, became reduced to 10.4 Cm. or about one-tenth, whilst the ash was reduced from 0.0026, to 0.0011 gramme. The toughened paper contains no nitrogen. To determine this point, a portion was gently heated in a test-tube with strong sulphuric acid, by which it was almost immediately decomposed and carbonized. Water was added and the mixture filtered, a clear white filtrate being obtained. On the other hand, similar paper that had been converted into pyroxylin, with the same nitric acid mixed with an equal bulk of oil of vitriol, dissolved in warm sulphuric acid without blackening, abundance of brown fumes being evolved, and the solution after dilution reacted strongly with ferrous sulphate. Moreover, the toughened paper gave no evidence of containing nitrogen by Lassaigne's test, and it burns like ordinary paper, and not at all like pyroxylin.

Subjected to the action of nitric acid of the strength specified, paper undergoes no increase in weight, as is the case when pyroxylin is formed, but, on the contrary, there is a slight decrease. Thus a circle of Swedish paper 11.5 Cm. in diameter weighed 0.6795 gramme before treatment with nitric acid, and afterwards it weighed only 0.6749 gramme, showing a loss of 0.58 per cent.

The effect of nitric acid on paper does not appear to have been studied very completely. Gmelin states ("Handbook," 15,135), apparently on his own authority, that "cotton, linen, or paper immersed for two or three minutes in nitric acid of sp. gr. 1.5 acquires the texture of parchment, and is rendered impervious to light and water, because it becomes covered with a film of xyloidin," and further, that "paper immersed in cold, strong nitric acid swells up to a jelly, which gives a blue color with iodine on isolated spots, and therefore contains starch;" and, on the authority of Mitscherlich, that "Swedish paper is not at all decomposed by immersion in cold nitric acid of sp. gr. 1.2, and but slightly in the acid heated to 100°." No further information than this has been found by the writer.—E. E. H. Francis in *Journ. Chem. Soc.*

Semi-Annual Report on Commercial Drugs and Chemicals.*

Aconitine.—Gehe & Co. state that they prepare this alkaloid according to Duquesnel's method, *slightly modified*. This yields both an amorphous and a crystalline alkaloid. It has, however, been ascertained by Bunsen and Madsen, in Copenhagen, that Gehe's *crystalline* aconitine is *less powerful* than the amorphous variety, which is just exactly the reverse of what is observed in the products of other manufacturers. Gehe & Co. explain that the only modification of Duquesnel's process which they have made is to use oxalic in place of tartaric acid, and they cannot understand the cause of the difference in action.

[We think it unfortunate that this step has been taken, as there is already too much confusion among and discrepancy between the different aconitines of the market. In our opinion, it would be the safest plan, though perhaps attended with loss to the makers, *to withdraw the whole product from the market*. In the case of such a powerful alkaloid, which appears to be so easily affected by reagents, perfect uniformity of preparation is the only guaranty for uniformity of effect.]

Avelos Milk, originally recommended by Dr. T. A. Velloso as a specific in cancerous sores, which were to be painted with it every third day, is not yet easily obtainable, nor is its true source known.

Azolitmin.—The pure blue coloring matter of litmus has been in good demand in spite of its high price (10 Gm. at 4 marks, or about $3 per oz.). The substance is dissolved in water containing a little caustic soda, the proper tint produced by cautious addition of oxalic acid, and paper impregnated with this solution in the usual manner. (See Lacmoid.)

Balsam Copaiba.—The thin-fluid Para balsam is supplied in largely increased quantity, and though this variety is much in demand, fresh shipments, which constantly arrive, will probably prevent its becoming higher.

Balsam Peru.—The price of this article has considerably declined, and supplies have been abundant. In spite of rumors of a diminished crop, the imports at Hamburg have been very large, and Gehe & Co. remark that spurious balsam has now become quite scarce.

The improved test for the purity of balsam of Peru devised by the German Pharmacopœia Committee is one which every genuine balsam will stand.

Bismuth.—The uncertainty regarding the value of this metal terminated about the middle of last January in an advance of about fifty cents per kilo, which was determined on by the syndicate. It was the competition of the Australian mines which had disturbed the long-continued stability of the value of this metal, arranged by the coalition of the Saxonian and South American mines. The new competitor has now been taken into the firm, but nothing is known as to its output. It should have been expected that an increased production would result in lower prices.

Bromine and Bromides.—The importation of American bromide of potassium in Germany has greatly diminished, since a better quality can be made there at lower prices. Since the beginning of this year, the reduced working of the Stassfurt mines has diminished the output of bromine by one-half, whereby this substance has become very scarce and high. Heretofore all attempts to drive up the price of bromine and bromides by a coalition between the American and European manufacturers turned out nugatory. Whether such a coalition is now possible remains to be seen. Gehe & Co. think that the American product will still be unable to compete with the German, as the latter is free from chlorine, while the former is not. [We think, however, that it can compete, and probably does so already, to judge from the present higher quotations for American bromine and bromides in the market.]

Caffeine.—The recently introduced compounds, *sodio-benzoate* and *sodio-cinnamate of caffeine*, as well as the hydrobromate, have been in active demand. [The two former have been used with much success in form of hypodermic injections in Bellevue Hospital, New York.]

Camphor.—The price has again further declined, and although the export from Formosa was expected to be considerably diminished owing to the Franco-Chinese war, yet Japan produces so much that the deficit will not be noticed. The Japanese government has abolished certain restrictions formerly in existence regarding the collection of crude camphor. At present there is nothing to prevent the total destruction of the camphor tree forests, and, unless precautionary measures are taken, the camphor trade is in danger of being entirely destroyed.

Cascara amarga.—The bark of this, which is probably a *Picramnia*, of the family of Simarubeæ, contains an alkaloid discovered by Thompson, which the latter named picramnine. The bark and its preparations are reported to be useful in certain chronic skin diseases, syphilis, etc. Gehe & Co. had not yet obtained a supply from the West Indies.

Cinchonamine.—This alkaloid, discovered in the variety of Cuprea bark, derived from *Remijia Purdieana*, promises to become a valuable reagent in the laboratory, since it yields, with nitric acid, an almost insoluble precipitate.

Cinchona Bark.—The complete break-down of the bark market, after last year's disastrous failures, was only prevented by the fact that the hypothecated quantities of quinine and bark were in the hands of powerful banking institutions which permitted but little or none at all to reach the market. Manufacturers' barks, therefore, receded but slowly in price, and when the lowest figure was reached in November last, with 5*d.* per unit, the Ceylon planters declared that it did no longer pay to collect the bark. By holding back stocks, better prices were realized towards January, and when the news of political disturbances in Colombia reached Europe, the demand became likewise more animated. The stocks in England were, on Dec. 31st, 1884, 19,167 bales less than in 1883; in France, 7,077 bales less; and in New York, 3,600 less. Among the London stocks, there are still quoted some 10,000 bales of Cuprea bark, which had been long ago declared as exhausted.

* Abstracted from Gehe & Co.'s Handelsbericht, April, 1885.

Ceylon's export was almost double that of the preceding year:

Oct. 1, 1880 to Sept. 30,	'81:	1,308,518 lbs.
" " 1881 " "	"	'82:	3,099,893 "
" " 1882 " "	"	'83:	6,925,598 "
" " 1883 " "	"	'84:	11,492,947 "

The exports for the current year were anticipated to be smaller, but up to Feb. 19th, not less than 3,731,762 lbs. had already been exported.

If, in spite of this and other unfavorable circumstances, higher prices could be obtained for bark during January, this could be only due to sudden large purchases for the U. S., which had only a small quantity in stock, and where the new factories (in Philadelphia and New York) were being erected or completed. It is known to be the object of the American manufacturers to render the importation of European quinine superfluous and impossible. To do this, a very much larger consumption of bark by the American makers would be necessary, as may be seen from the amounts of European quinine imported in the U. S. since 1877:

1877 (20% ad valorem)..	75,804 oz.
1878 " " ..	17,549 oz.
1879 " " ..	228,348 oz.
1880 (duty-free).....	416,998 oz.
1881...	408,851 oz.
1882.....	794,495 oz.
1883.....	1,055,764 oz.

And while there are several ways in which the American makers might attempt to stiffen the market (after supplying their immediate needs), this will probably prove futile in view of the large supplies available in London. Besides, large quantities of quinine are still locked up as collateral held by banks, and if the U. S. produce enough for home consumption, the European factories will turn out more than they can dispose of. An increase of quinine prices could, therefore, only result from a diminished export from Ceylon, combined with an interruption of South American shipments.

Coca Leaves and Cocaine—are undoubtedly the lions of the day, no other drug having caused such a stir, professionally or commercially, for many years past. Gehe & Co. have prepared the alkaloid cocaine for almost twenty years, but it was only known to be able to excite the nervous system, to prevent waste of nitrogenous tissue, and to be useful, therefore, in certain diseases, as gastric troubles, typhus fever, phthisis, and the morphine habit. But when Dr. Koller, of Vienna, had discovered its local anæsthetic effects upon the eyeball, the demands for the alkaloid became so urgent that supplies, which formerly would last several years, were exhausted in a few days. Coca leaves, at the same time, began rapidly to rise in value and it was only a short time until they also became scarce, almost at any price. The first outside supplies obtained by Gehe & Co., after the first rush was over, still contained the normal percentage of alkaloid, namely 0.3%, but soon afterwards lots appeared which varied greatly and often contained but little cocaine.

Coca leaves of good preservation have not been in the market for a long time, since it is difficult to dry the freshly gathered leaves in the rainy districts of South America where the shrub flourishes most abundantly, and means of artificial drying are not yet available. Gehe & Co. have strong reason to believe that fresh coca leaves, in their native home, contain much more cocaine (up to ½%) than the imported dry ones. As cocaine is undoubedly destined to be an important remedy, it would be advisable to attempt the cultivation of coca in Southern France or Italy [according to Gehe & Co. We have already in the beginning of this year expressed our views on the cultivation of coca in this country, and suggested that, if no suitable locality can be found within the U. S., Mexico would probably be found to contain districts favorable to its growth. It would certainly be a paying investment, if successful plantations could be started].

Gehe & Co. further state that cocaine or an alkaloid allied to it may possibly be present [?] in the young leaves of the horse-chestnut (*Æsculus Hippocastanum* L., nat. or. Sapindaceæ), and it remains to be seen whether the species of Erythroxylon which is indigenous in Brazil does not contain cocaine or a similar alkaloid likewise.

The last coca leaves disposed of, from old stocks in the market, yielded no cocaine at all, but another alkaloid, which, as amorphous hydrochlorate, resembled cocaine in some respects and differed from it in others, while at the same time it cannot be identical with hygrin. Dr. Koller, who experimented with it, found that two to three drops of a five-per-cent solution, applied to the eye, did exert some anæsthesia, without dilatation of the pupil. Its poisonous effect is much inferior to that of cocaine, as was shown by experiments on animals.

Cola-nuts—promise to become a reliable substitute for the scarce Guarana. The supply, however, is as yet very irregular.

Condurango.—True Mataperro Condurango has become cheap, as large quantities were brought from Ecuador.

Cubebs—have varied greatly in value and quality. Many lots were below the average, and even adulterations have been noted, for instance in New York, where sixteen bales were refused admission [and likewise in London, where false cubebs were first noticed, we believe]. The new crop is shortly expected and will probably be available at more reasonable prices.

Daturine—is gradually being laid on the shelf, since it is becoming more generally known that it is identical with atropine, while it is about seven times as dear, owing to the small amount obtainable from stramonium seed.

Ergot.—Tanret recently published a paper (see our May number, p. 97) in which he denied and even ridiculed the results of the investigations of Dr. Kobert, who had discovered the new principle *cornutine* (see February number, p. 25), Recent experiments of Dr. Kobert, however, communicated by Gehe & Co., tend to show that cornutine causes rapid and energetic contraction of the pregnant uterus. When tried on pregnant animals, the fœtus was expelled quickly, together with placenta, without injuring the mother. [It would seem, however, that further study is necessary, before the substance can be used with safety in man. Gehe & Co. sell it at $6 per gramme.]

Euonymin.—Heretofore this name has been applied exclusively to a resinoid substance obtained from Euonymus atropurpureus, which has been used as a cholagogue and laxative. The same name has, however, lately been applied by Hans Meier and Romm, at Dorpat, to a crystallizable glucoside obtained from the plant, which is an intense heart-poison, and is likely soon to play a great rôle as a substitute for digitalis.

Glycerinum Nitricum.—This name has been adopted by Gehe & Co. to designate nitroglycerin, of which they keep an alcoholic solution 1 in 20. Gehe & Co. state that they have chosen this name, first, because they did not wish to use the ordinary name nitroglycerin (which reminds one of dynamite and dynamiters), but "because it is chemically correct. The article usually called nitroglycerin is not a nitro-compound, but the ternitrate of glycerin." [The words in quotation marks are translated literally. We need hardly say, that the statement is incorrect, and consequently the name not "chemically correct" either. It will do well enough, however, as a make-shift.]

Jequirity is in smaller demand, since its use has been reported to be injurious to the eyesight. Its efficiency is now stated to be due to an albumen-like substance, *abrin*, discovered in it by Warden and Wadell.

Juniper Berries and Oil.—The crop of Carpathian berries was a total failure, and recourse had to be had to Italian berries, which are, however, not sufficient in quantity to supply the demand. Hence both the berries and the essential oil experienced a considerable advance in price.

Kefir, the so-called Caucasian milk-ferment, begins to attract considerable attention. It is used for the preparation of a beverage resembling koumys, and forms the chief food of the Caucasian mountainers during the summer. The ferment, consisting of bacilli (new species *Dispora Caucasica*, Kern) and ferment cells, is developed in fresh milk which should not be too fat. According to the state of the atmosphere during the drying, and according to whether it has been developed in cows', sheeps', or mares' milk, it has a darker or lighter color.

Kousso is becoming scarce, since no fresh supplies have reached Trieste for a long time past.

Lacmoid, a coloring matter resembling litmus, obtained from resorcin, is now also in the market (about $4.80 per oz.). The transition tint, with this reagent, is less sharp than with azolitmin. The latter assumes with a trace of acid a bright onion-red tint, while the former turns cherry red.

Methylchloride, a gaseous anæsthetic, is put on the market by a Paris firm, which sends it out either in large iron or in smaller copper cylinders tested to twelve atmospheres.

Milk-Sugar.—Swiss manufacturers will probably be compelled to moderate their demands hereafter, since more attention is being paid in Germany to the manufacture of this product on a large scale, and the quality of the German product is much superior. [Reports of the manufacture of milk-sugar outside of Switzerland have often made their appearance; but, so far, the enterprise seems to have been, in most cases, a failure. See AM. DRUGG., 1884, 161.]

Musk.—American musk, from the musk-rat, was proposed some time ago as a substitute for the genuine article. It has been tried by perfumers, but has not found any favor so far.

Naphthalin, which is being used in increased quanties, may be best purified by repeated crystallization from alcohol. Sublimation is less advisable, since its high boiling point might induce decomposition.

When powdering naphthalin, a little alcohol greatly facilitates the operation.

[As will be remembered, we have pointed out that a very small quantity of oil of bergamot completely modifies the disagreeable odor of the substance.]

Naphthol has been in very active demand lately, as a remedy in skin diseases.

Oils of Orange, Bergamot, and Lemon.—These oils have dropped to prices lower than have ever been reached before. The principal factors have been, first, a series of large fruit crops, and secondly, an enormous increase of production. Especially is this the case with oil of lemons, of which immense quantities have been turned out, in consequence of the unremunerative prices offered for the fruit. The Sicilian manufacturers eagerly underbid each other to dispose of their output, as low as 6¼ marks per kilo (about 78 cents per kilo) having been asked for it. In spite of the

(Continued on page 111.)

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EDITORIAL.

MR. KILMER'S experience in window decoration seems to justify what has been said by us in preceding numbers regarding its importance. It has always been somewhat remarkable that pharmacists should so often pay a rental for windows which they put to no better use than advertising other people's business. We hope that the suggestions we have published will enable them to do something better with the space at their disposal than filling their windows with display cards of theatre companies, itinerant showmen, and cigar manufacturers.

THE importance of several original communications published in this number, as well as the space given to answers to queries, has led us to defer until next month the continuation of the translation from Dr. Hager's work on practical pharmacy.

THE first of a series of papers by Professor Laurence Johnson on the application of photography will be found in this number and will be of interest to those who have the taste and opportunity for studying this important branch of natural science.

There are many reasons why pharmacists should know more of the practical details of photography, and among them is the fact that the process is largely of a chemical nature and therefore germain to the pharmacists' profession. Another reason, quite as worthy of consideration at present, is the opportunity afforded by the present development of the popular taste for dry-plate photography, for extending the pharmacist's business so as to include photographic materials in his stock.

There are but few chemicals employed which are not now obtainable in most drug-stores, and it will involve but little outlay of money or time for the pharmacist to cultivate this branch of business. To do this successfully, he should know something of photography and be able to advise his customers what to purchase and how to overcome some of the difficulties which they may encounter in their early attempts at picture-making.

It may not be necessary for a pharmacist to carry a stock of photographic apparatus; but the dry-plates and chemicals are easily preserved, and should yield a good profit.

WE conclude in this number the description of the store of Messrs. Kelley and Durkee, in Boston, although the illustration of the counter apparatus described in the text will not appear until next month, owing to the space required in this issue for the illustration of the details of the counters and cases.

THE Committee on Pharmacy and Queries of the New York State Pharmaceutical Association solicit suggestions from members and others as to the list of queries to be proposed.

The Worcester (Mass.) North Druggists' Association held its second annual meeting Tuesday, May 5th, at Fitchburg Hotel, Fitchburg, Mass., President W. A. Macurda in the chair, about twenty members being present. The morning session was devoted to the annual reports of officers, to the reading of papers by Messrs. F. A. Davison, of T. Metcalf & Co., of Boston; Converse Ward, of Athol; H. G. Greene and H. F. Rockwell, of Fitchburg, and a general discussion of questions of interest to the association. Dinner was served at two o'clock, after which the members proceeded to the election of officers for the ensuing year, with the following result: *President*, W. A. Macurda, Fitchburg; *Vice-President*, H. A. Burdett, Clinton; *Sec. and Treas.*, H. F. Rockwell, Fitchburg; *Standing Committee*, H. A. Estabrook, of Fitchburg; F. W. Lord, of Athol; C. F. Nixon, of Leominster; James Emerson, of Gardner; and D. H. Joel, of Fitchburg.

The association has had a very prosperous year, keeping harmony among its members, and preventing the foolish cutting of prices from which druggists have suffered so much in other cities.

HENRY F. ROCKWELL,
Secretary.

Preparing Hydrosulphuric Acid absolutely free from Arsenic.

HYDROSULPHURIC acid gas free from arsenic could be hitherto prepared only by starting from materials free from arsenic, while no method was known to deprive arsenical hydrosulphuric acid gas from the contamination. As suitable sources, free from arsenic, the following were usually recommended: sulphide of calcium, and sulphide of barium, which have the additional advantage that they eliminate no hydrogen in addition to sulphydric acid, liquid sulphydrates of barium, calcium, or magnesium, artificial (pure) sulphide of iron, sulphide of zinc (see *note*, below), etc., etc. All these substances are not as easy to obtain as the ordinary crude sulphide of iron of commerce, and besides, it is not by any means easy to procure a hydrochloric acid free from arsenic. It will therefore be of great importance to possess a method of preparing absolutely non-arsenical hydrosulphuric acid gas, even from contaminated materials. This may be accomplished, according to Otto v. d. Pfordten (from whose paper we have abstracted this article), by passing the hydrosulphuric acid gas over sulphide of potassium, the ordinary officinal liver of sulphur, which completely retains any accompanying traces of arsenetted hydrogen.

For this purpose, the generated gas is first made to pass through a wash-bottle, and then through a chloride of calcium apparatus to dry it. It then enters a difficultly fusible glass tube, passing through a sheet-iron box of about 30 Cm. in length, and 10 Cm. in height and depth, under which is placed a gas-flame and which acts as a hot-air bath for the tube, which must be kept at a temperature of 350 to 360° C. The tube is filled with pieces of sulphide of potassium, which, though it melts somewhat at the above-named temperature, yet retains its shape and consistence, so that there is no danger of the tube being stopped up. If the operation is to be frequently repeated, and the control of the proper temperature by means of the hot-air bath too circumstantial, the tube may be heated by keeping it immersed in melted lead. The gas passing from the tube is passed through a solution containing carbonate of sodium, and is then completely pure and fit for use. It no longer contains even a trace of arsenic. The author thinks that the arsenic is withdrawn from the gas probably according to the following reaction:

$$2AsH_3 + 3K_2S_2 = 2AsS_2K_3 + 3H_2S$$

arsenetted hydrogen.	sulphide potassium.	sulphar-senite potassium.	hydrosulphuric acid.

—*Ber. Deutsch. Chem. Ges.*

Note.—The most suitable source for the generation of hydrosulphuric acid *free from arsenic*, according to Hager, is sulphide of zinc in small pieces, in quantity from ½ to 2 Gm. (8 to 30 grains) for each development, if carried out on the scale shown in the illustration on p. 42 of our March number (which see), where a test-tube holds the whole of the liquid to be treated.

After having been used, the end of the delivery tube is placed under water. If 60 C.c. of dilute sulphuric acid have originally been introduced into the flask, as much as 10 Gm. of sulphide may gradually be introduced before it needs refilling.

In place of sulphide of zinc, sulphide of calcium or sulphide of barium may be used, as these are equally free from arsenic.

Sulphide of zinc may be prepared as follows: 100 parts of pure oxide of zinc are mixed with 45 parts of precipitated sulphur, and the mixture gradually, and in 4 or 5 portions, introduced into a boiling solution of 15 parts of caustic soda in 150 parts of distilled water, contained in a porcelain capsule or casserole, and the whole boiled, under stirring, for half an hour. The mixture is then diluted with water, the sediment collected on a strainer and washed with water. The contents of the strainer are then freed from water as much as possible, by squeezing, the mass spread out upon porcelain plates and dried in a lukewarm place. Or it may be mixed with one-tenth of its weight of powdered white bole and a little sugar, then formed into slender sticks (about 0.4 to 0.5 *cm.*, or ½ to $\frac{3}{16}$ inch. thick), which are to be dried in the same manner.

(Continued from page 109.)

low price for the genuine oil, adulterations are more common than ever, and great care should be exercised in purchasing.

Peptone, Dry.—Gehe & Co.'s dry peptone contains of true peptone about 65 per cent; of partly peptonized substances, about 29 per cent.

Physostigmine.—It is surmised that the salicylate has a less energetic effect than the sulphate. [We doubt this, as we have not heard of any such observations from the physicians of our acquaintance who have used both salts.] It is an interesting fact, however, that at present only that kind of sulphate is in demand which will rapidly turn red when dissolved. It is supposed that this change is a criterion of greater activity.

Pilocarpine.—Besides its medicinal use, it is still in good demand as a *hair-restorer*.

Rhubarb.—Fine Shensi rhubarb, the most esteemed variety, has become quite scarce. The inferior qualities of rhubarb are generally lower in price than last year, but the better ones, namely, Canton and the before-mentioned Shensi, are very high.

Santonin.- The new factory at Tshimkend, near Tashkend, in Turkestan, which has driven all others out of competition, has begun to produce, and the first instalment of their manufacture is on the road to Europe.

Senna (*Alexandria*) is steadily advancing in price, owing to the failure of new supplies reaching Cairo from the mountainous districts of Dongola, in the Sudan.

Syzygium Jambolanum Seeds—the seeds (or rather fruits) of a myrtaceous plant indigenous in the East Indies, and cultivated on the Antilles, have been reported to favor the elimination of sugar through the urine in diabetes mellitus. The active principle is supposed to reside in the integument.

The Beautifying of the Skin.

IN the work on Diseases of the Skin, edited by Prof. H. von Ziemssen,* Dr. Heinrich Auspitz, of Vienna, makes the following observations upon this subject:

1. A healthy integument is not necessarily beautiful. Even if all requirements concerning diet, residence, atmospheric and climatic conditions, etc., are carried out, the complexion is often extremely bad. The general condition of health has no influence on the beauty of the complexion, though it has upon the health of the skin.

2. Cleanliness is a *sine qua non* of the beauty of the complexion, though it does not play a great part in the health of the skin.

3. Water is serviceable to the skin only in moderate amounts and at moderate temperatures. Very cold or warm baths, when used to excess, diminish the elasticity of the skin and its power of resistance to external irritants.

4. Distilled and so-called soft water are more suitable for washing and less irritating than hard water.

5. The hard soda soaps are usually preferable to the softer potash soaps for toilet purposes. The quality of soaps depends upon the quality of their constituents and the thoroughness of the saponification. Good soaps must not contain free alkali, or any foreign irritating substance. The addition of moderate quantities of perfumes does not materially change the quality.

6. Simple, finely-ground powders, such as starch, magnesia, etc., are entirely innocuous, and often act as a useful protection against external irritants.

7. Frequent application of alcohol abstracts the water of the skin, makes it dry and brittle, and impairs its nutrition. This is also true of glycerin. All toilet washes containing alcohol to any considerable extent should be avoided.

8. This is true to a still greater extent of other additions to washes, such as corrosive sublimate, mineral acids, certain metallic salts, etc.

9. Camphor acts merely as a bleaching powder. This is also true of benzoic resin, sulphur flowers, and substances containing tannic acid.

10. The use of sweet-smelling oils and fats should be employed to a greater extent than is now done for toilet purposes.

11. This is particularly true with regard to the growth of the hair. The nutrition of the scalp should be increased by the rational application of fat (for example, in the form of oil baths by means of the application at night of a sponge soaked in oil upon the scalp), and the greater use of simple pomades; this should be applied to the roots of the hairs rather than the shafts.

12. Substances should be avoided, or sparingly used, which abstract water from the skin and the roots of the hair.

* New York: William Wood & Co., 1885.

Improved Tests for German Pharmacopœia Preparations.*

THE Pharmacopœia Commission of the German Apothecaries' Association have proposed the following amendments to the German Pharmacopœia:

Chininum Hydrochloricum (*Quininæ Hydrochloras*).

Foreign Alkaloids.—Two Gm. of the salt are mixed with 2 Gm. of sodium sulphate and 20 Gm. of water, and the whole allowed to stand at 15° C. for half an hour, frequently shaking the mixture, which is then filtered; 5 C.c. of the filtrate treated with ammonia until the precipitate formed redissolves should not require more than 7 C.c. of ammonia for the purpose.

Morphium (*Morphine*).—A mixture consisting of 0.05 Gm. of the salt, 10 drops of sulphuric acid, and 1 drop of nitric acid, should not appear of a reddish-yellow color.

Collodium Cantharidatum.

Acidity.—All ethereal extracts of cantharides have an acid reaction, for which reason a weak reaction on the part of cantharides collodium is permissible.

Cuprum Oxydatum (*Cupri Oxidum*).

Nitric Acid.—When 0.2 Gm. of the salt is gently heated in a test-tube with 2 C.c. of dilute sulphuric acid and 2 C.c. of a solution of ferrous sulphate (1:3), the addition of 1 C.c. of strong sulphuric acid to this mixture should not cause the formation of any red or brown ring.

Ferrum Pulveratum.

Sulphur, Phosphorus, and Arsenic.—The hydrogen gas developed by dissolving 2 Gm. of the powder in 30 Gm. of dilute hydrochloric acid should not, in the first few seconds, color a piece of bibulous paper moistened with a solution of lead acetate (1:10), nor, when burnt, should the flame produce dark spots upon a piece of cold porcelain.

Lithium Carbonicum (*Lithii Carbonas*).

Foreign Alkaline Carbonates.—A solution of 0.1 Gm. of the salt in 1 Gm. of dilute sulphuric acid, to which 1 Gm. of water is added, when treated with 4 Cm. of alcohol, should yield a clear liquid.

Natrium Bicarbonicum (*Sodii Bicarbonas*).

Monocarbonates.—When 2 Gm. of the pulverized salt are shaken up for ten minutes, at the ordinary temperature, in a closed test-tube, with 15 Gm. of water, so that the tube is quite full, and the solution thereby formed poured off from the undissolved residue into a test-tube containing 5 Gm. of a solution of mercuric chloride, within five minutes a white turbidity, but no reddish-brown coloration should ensue.

Pilocarpinum Hydrochloricum (*Pilocarpinæ Hydrochloras*).

Acidity.—A weak acid reaction is permissible.

Resina Jalapæ.

Foreign Resins.—Two Gm. of the resin heated for two hours over a water-bath with 10 Gm. of ammonia in a well-closed glass flask of about 200 C.c. capacity should yield a solution which does not gelatinize on cooling, which, saturated with acids, yields but a slight flocculent turbidity, and, when evaporated, but a very small residue insoluble in water.

* *Archiv der Pharmacie* and *Chem. and Drugg.*

A Druggist's Show-Bottle.

A WEAK solution of iodine and iodide of potassium in water gives a pretty crimson color, and is in much request on this account by chemists for their show-bottles. A very good strength is obtained by using ¼ oz. each of iodine and iodide for a three-gallon bottle, and to the solution may be added a small proportion, say one per cent of hydrochloric acid. Methylated spirit must not be used to dissolve the haloids, or unexpected results will follow, the probability being that the entire liquid in the show-bottle would be colorless in a few days if in summer, or if in winter, in a few weeks. This was many years ago the experience of the writer, who had on one occasion used a few ounces of methylated spirit to dissolve the iodine and iodide before adding the water, and as the circumstance has recently been recalled to memory, it may probably be of interest to refer to it somewhat in detail.

The reactions involved in the change of color, or rather in the loss of color, are complicated, and would, if thoroughly understood, form an interesting chapter in organic chemistry. It was at first thought that the ultimate product of the decomposition was ethylic iodide, which might be obtained in the following manner: It is well known that chlorine and ethylic alcohol react to produce aldehyde and hydrochloric acid, one atom of hydrogen being simply abstracted from the alcohol by the haloid to form the acid, thus:

$$C_2H_6O + 2Cl = C_2H_4O + 2HCl.$$

It is not known whether iodine possesses this power, but in the absence of evidence to the contrary, it may be assumed as probable, and in that case the following would occur:

$$C_2H_6O + 2I = C_2H_4O + 2HI.$$

Hydriodic acid and alcohol, when brought into contact, undergo decomposition, with the formation of ethylic iodide and water, this being brought about by an atom of iodine and a molecule of hydroxyl, and changing places, thus:

$$C_2H_6HO + HI = C_2H_5I + H_2O.$$

Ethylic iodide is a colorless body, but under the influence of sunlight it is decomposed to diethyl and iodine, thus:

$$2C_2H_5I + C_4H_{10} + I_2,$$

and the free iodine imparts a brown color to the liquid.

As it happened, however, that the liquid remained perfectly clear even in the direct rays of the summer sun.

this operation was rendered doubtful, and with the view of settling the point, a series of solutions were prepared and exposed to the light.

These were composed as follows:

1. Iodine, and iodide of potash, and water.
2. Iodine, and iodide of potash and water, with 1 per cent hydrochloric acid.
3. Iodine, and iodide of potash and water, with 2 per cent methylated spirit.
4. Iodine, and iodide of potash and water, with 2 per cent rectified spirit.
5. Iodine, and iodide of potash and water, with 2 per cent methylated spirit and 1 per cent acid.
6. Iodine, and iodide of potash and water, with 2 per cent rectified spirit and 1 per cent acid.
7. Iodine and methylated spirit.
8. Iodine and rectified spirit.

Within three weeks, during which time the sun was seen on two days only, solution No. 5 was almost colorless, No. 7 was in much the same condition, and No. 3 had begun to change, while all the others were unaltered in appearance. Singularly enough, these three solutions are those in which methylated spirit was used, and it therefore follows that we must look to the methyl rather than the ethyl for an explanation of the reaction.

This source is all the more probable since it is well known that hydriodic acid acts energetically on methylic alcohol, provided the conditions are favorable. If we take No. 5 solution, in which the change took place most rapidly, we have still further confirmation of this hypothesis, as in this particular case the hydriodic acid is ready formed without waiting for the iodine to act on the spirit at all. The iodide of potash and the hydrochloric acid suffer double decomposition, thus:

$$KI + HCl = KCl + HI,$$

and the hydriodic acid thus formed acting on the methol produces methylic iodide, thus:

$$C_2H_4O + HI = CH_3I + H_2O.$$

This explanation does not, it is true, account for the disappearance of the free iodine, but it is extremely probable that the rearrangement that takes place is hastened by catalytic action, so that when once the reaction has been started, it proceeds until all the iodine is ultimately transformed into iodide.

That the methyl has to do with the decolorization rather than the ethyl is evident from the fact that the plain solution of iodine in methylated spirit lost its color, while the solution in rectified spirit was quite unchanged. It may happen, however, that impurities in the methylated spirit may have something to do with the loss of color, but the probability is that any foreign body would be present in too small a proportion to affect the result; and the likelihood, therefore, is that the change is due to the action of the methyl on the iodine.—*Chem. and Druggist.*

Toothache Cure.

A. GAUDET makes a report on a preparation which has come under his notice in form of a sample in the possession of a female customer, who praised it greatly. He succeeded, after numerous trials, in ascertaining its composition, which is as follows:

Mastic, tears	8 parts.
Balsam Peru	5 "
Chloroform	14 "

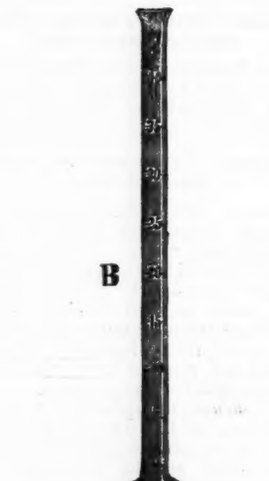
Dissolve the mastic in the chloroform, then add the balsam. After twelve or fifteen hours, filter.

For use, place two or three drops upon a small pellet of cotton, which is to be introduced into the cavity of the hollow tooth.—*L'Union Pharm.*

APPARATUS FOR DETERMINING THE SPECIFIC GRAVITY OF GRANULAR AND PULVERULENT SUBSTANCES.

THE apparatus below described is called "volumenometer" by its designer, Dr. C. Schumann, and is specially intended for ascertaining the specific gravity of granular and powdery substances.

A broad, flat-bottomed glass vessel *A* bears ground into its neck a graduate tube *B*, of the capacity of 40 C.c., and divided into $\frac{1}{10}$ C.c. For use, the apparatus is filled to the zero mark with a liquid indifferent towards the substance to be examined (water, oil of turpentine, etc.). A weighed portion of the substance is then gradually added through a wide-mouthed funnel, the quantity used varying between 60 and 200 Gm., according to its bulkiness. The tube is then closed with a cork, and allowed to stand until the surface layer of liquid is clear enough to read off its position by the lower meniscus. The specific gravity of the substance is found in the usual manner, by dividing the number of grammes of the substance used with the number of cubic centimeters by which the liquid has risen in the tube.



In order to avoid errors arising from differences of temperature, it is only necessary to allow both the substance and the liquid, previous to the experiment, to acquire the temperature of the room, and to take care that this same temperature be maintained throughout the experiment.—*Chemiker Zeit.*

A New Delicate Reagent for Nitrous Acid.

RAPHAEL MELDOLA has found that a dilute solution of a derivative of para-nitraniline, namely para-amidobenzol-azodimethyl-aniline, has the property, when coming in contact with nitrous acid and air or oxygen, of acquiring a blue color.

[The author describes the mode of preparation and gives the chemical relations of this substance in his original paper, in *Ber. d. Deutsch Chem. Ges.*, vol. 17, 256].

The reagent is in form of a dark orange colored powder, which must be completely soluble in dilute hydrochloric acid. For use, a solution containing 0.5 Gm. in 1 liter is prepared, which possesses a deep red color.

To test a liquid for nitrous acid, a few drops of the red solution are first added, and immediately afterwards a few drops of hydrochloric acid. Ammonia is then added in drops and the liquid stirred after each addition until the blue color appears. The ammonia precipitates the base, and the latter is converted by even traces of nitrous acid into a tetra-azo salt, which is the agent that causes the blue color on exposure to air.

This reagent is able to reveal nitrous acid even in very dilute solution, the limit appearing to be 1 part (of sodium nitrite) in 6,400 parts of water. It has this advantage over metadiamidobenzol (or rather meta-phenyl diamine), formerly used as a color-test, that its solution may be kept unaltered for any time, while the last-named reagent was exceedingly prone to become colored by contact with the least trace of nitrous acid. The blue color produced in the reaction is not stable, and disappears slowly on exposure to air.

If the reagent is to be used in practice, it will be inconvenient to designate it by its chemical name, which is too long and unsuited for practical workers. It might be simply named: "Meldola's Reagent for Nitrous Acid," were it not that we have already too much of this sort of nomenclature.

Mercury in Sulphuric Acid.

COMMERCIAL sulphuric acid, both the common and the fuming, often contains traces of mercury which cannot be removed by redistillation. The quantity of the metal is, however, so small that it cannot be discovered by the usual reagents. Its presence may be established by diluting the acid with ten to fifteen times its weight of water, and suspending in it a golden needle, as a negative pole of a galvanic battery. After the current has passed a sufficient time, the needle is removed, washed with water and alcohol, then dried in an exsiccator, and finally heated in a glass tube closed at one end, and of which the other end is drawn out to a capillary diameter. On heating the needle, the mercury condenses in the capillary tube in microscopic droplets.

It is supposed that this fact may have important bearing upon certain pathological and physiological investigations. The above discovery was made in the course of an investigation to decide the question whether any sulphide of mercury (cinnabar) introduced into the circulation of the mother could pass over into that of the fœtus.—DR. M. MIROPOLJSKY, in *Chem. Zeitung.*

Iodine in Human Urine After the External Application of Iodoform.

IN a few cases of the application of iodoform, no iodine was found in the urine, but in all other cases in which poisoning did not occur, the iodine is present in the urine chiefly as potassium iodide, but to some extent also as iodate. In cases of poisoning by iodoform, the iodine is discharged not so much in the form of potassium iodide as in combination with organic compounds. From this it is concluded that if a means were discovered by which the iodine could be converted, before its absorption, into potassium iodide, a protection against poisoning might be secured.—J. GRUENDLER in *Chem. Centralbl.*

Preparation of Sodium Sulphide.

THE best yield is obtained when 45 parts of soda in solution are saturated with sulphuretted hydrogen, the solution being allowed to become warm; a solution of 55 parts of caustic soda is then added, and the whole allowed to crystallize.—A. DAMOISEAU in *Pharm. Journ.*

On the Physiological Action of Brucine and Bromo-strychnine.

THERE has been a considerable difference of opinion regarding the action of brucine, some saying that its action is like that of strychnine, but weaker; others that it was a bitter tonic, with little or no convulsive power. The reason of this difference of opinion is, I think, shown by some experiments which I have made with pure brucine, kindly given to me by Mr. Shenstone. From these experiments it appears that brucine has a convulsant action resembling that of strychnine, but the action is not only weaker in itself, but is so much lessened in the case of mammals by the rapid elimination of the poison as to give rise to no symptoms when the brucine is taken by the mouth. Its constant action is shown very distinctly when the brucine is injected in solution into the abdominal cavity, so that it is rapidly absorbed, and the whole, or nearly the whole, of the quantity administered is able to act upon the organism, there being no time allowed for its excretion. When it is taken into the stomach, on the other hand, excretion appears to go on pari passu with absorption; there is thus no large quantity of brucine at one time in the blood, and the animal does not suffer. A decigramme of the hydrochloride of brucine dissolved in 3 C.c. of water, and injected into the abdominal cavity of a white rat, began to act almost immediately. The animal cowered and shivered after the injection; in three minutes it was seized with an emprosthotonic convulsion and died. A similar quantity given to another rat, mixed with suet, so that the animal ate it readily, produced no symptoms whatever. The symptoms produced in a rabbit were peculiar. For a number of minutes after the injection, the animal seemed quite unaffected, then all at once it took a sudden run of a few steps, leaped into the air, and fell dead.

The difference between the effect of brucine and strychnine appears rather to be one of degree than of kind, and to be chiefly dependent on the more ready elimination of brucine. Brucine, like strychnine, produces death by convulsions and not by paralysis; but like curare, which is also a product of a species of strychnos, it is innocuous when taken into the stomach, though fatal when injected under the skin. I have not yet made comparative experiments between the action of brucine and iodide of methyl-strychnine, but on comparing the result of my experiment with brucine and those of Fraser and Crum-Brown on iodide of methyl-strychnine, it appears that the two have a different action, the brucine causing convulsions, whilst the iodide of methyl-strychnine produces paralysis. This is a curious point, and is well worthy of investigation, inasmuch as it may throw some light on the chemical constitution of the alkaloid. We find, apparently, a somewhat similar condition in the alkaloids of opium. By the introduction of alcohol radicles into morphine substances are produced to which the name of codeines has been given. In some these, such as codethyline, $C_{17}H_{18}NO_2OC_2H_5$, obtained from morphine by the introduction of ethyl, the narcotic action is diminished; whilst, according to Von Schroeder, the convulsant action is increased in proportion to the number of atoms of hydrogen substituted by alcoholic radicles. If such be the case, it is remarkable that, by the addition of alcohol radicles to codeine or thebaine, their tetanizing action should be altered into paralyzing action, methyl-thebaine producing paralysis like methyl strychnine.

Bromo-strychnine* has an action very much like that of strychnine. In the pithed frog it causes clonic convulsions, which, like those of strychnine, may be brought on by a slight touch, jar, or external irritation. Like the convulsions of strychnine, they depend on alterations in the function of the spinal cord, and not on any action of the drug on the higher centres in the brain or medulla, as the effects occur when the brain is completely destroyed or when the head is cut off.—W. A. SHENSTONE, in *Journ. Chem. Soc.*, 1885, 143.

* This is a derivative from strychnine, by substitution of bromine in place of hydrogen, first described by the same author, in the same journal.

Action of Bisulphites on Chlorates.

ON treating sulphurous anhydride with chloric acid, sulphuric and hydrochloric acids are formed. The bisulphites of the alkalies, however, reduce the chlorates only in a very imperfect manner, as shown by the following equation: $NaClO_3+NaHSO_3 = HClO_2+Na_2SO_4$ and $NaClO_3+2NaHSO_3 = HClO+Na_2SO_4+NaHSO_3$. The resulting hydrogen sodium sulphate may be made to react with further portions of bisulphite, sulphurous acid being disengaged. On adding a solution of sodium bisulphite to a concentrated solution of sodium chlorate (100 grammes per liter), a violent action occurs, especially if the solution of chlorate is hot. A strong odor of chlorine oxides and of sulphurous acid is given off, and the solution will be found to destroy the color of indigo and other dye stuffs, and convert cellulose into hydroxycellulose. With salts of aniline the solution forms aniline-black, a reaction which confirms Rosenstiehl's theory as to the formation of aniline black. When chlorates and bisulphites act on one another in the presence of alcohol, chlorinated ethers are formed. — PRUDHOMME, in *Dingl. Journ.* and *J. Chem. Soc.*

Test for Nitrous Acid.

FROM a paper on Detection of Nitrous and Nitric Acids by R. Warington, we quote the following paragraphs which may serve as a supplement to what we have published on this subject heretofore:

The Naphthylamine Test.

Attention was called by Dr. Griess to this reaction as one of extreme delicacy for the detection of nitrous acid. The liquid to be tested is treated first with sulphanilic acid, then acidified, and a solution of hydrochloride or sulphate of naphthylamine added. If much nitrite is present, a deep ruby color is produced, the solution quickly becoming turbid by precipitation of the coloring matter; if only a trace of nitrite is present, the color will be pale pink.

Like the reaction previously described, the chemical changes consist of two stages, but as both of these will proceed side by side in an acidified solution, there is no advantage in postponing the addition of the naphthylamine. The reaction is not apparently facilitated by heat. Working in narrow test-tubes, and adding one drop of a saturated solution of sulphanilic acid, one drop of dilute hydrochloric acid, and one drop of a saturated solution of naphthylamine hydrochloride, the following results were obtained.

With a solution containing 1 part of nitrogen as nitrite in 1 million of water, an immediate pink color was produced, rapidly deepening to a dark ruby tint.

With a solution containing 1 part in 10 millions, a pink tinge was almost immediately produced, deepening gradually to a full rose color.

With a solution containing 1 part in a 100 millions, a pink tinge first became perceptible at the end of six minutes; at the end of an hour, the solution was of a distinct pale pink color.

With a solution containing 1 part in 500 millions, no reaction was obtained for an hour or two, but a faint pink tinge was finally developed. In a large volume of solution, a distinct pink tinge was obtained with a dilution of 1 in 1,000 millions; but this color was barely perceptible in a three-inch column, unless a test tube containing pure water was placed by the side for comparison.

The naphthylamine reaction thus exceeds all others in delicacy. The color produced has the additional advantage of being permanent.—*Chem. News*, Jan. 23d.

Note on Alkaline Copper Solution as Reagent for Glucose.

E. J. MAUMENÉ has made a remarkable observation on the effect which the use of either potassa or soda in the preparation of the well-known reagent for glucose exercises upon its efficiency.

Maumené first gives a synopsis of the various solutions that have been proposed, or are in use, namely, those of Barreswil, Fehling, Boussingault, Pasteur, and Maumené. The latter is composed of 41.67 parts of sulphate of copper, 16.67 of tartaric acid, 8.7 of potassa, and 27.6 of soda, made up with water to 1,000 Cc. This solution does not produce any reaction whatever with glucose, even at the boiling point of water, unless another equivalent of potassa is added.

Wishing now to ascertain what difference there would be between solutions made with either potassa or soda exclusively, he prepared first a test liquid with potash as follows:

Sulphate copper	41.67 Gm.
Bitartrate Potass.	28.89 "
Caustic Potassa (K_2O)	10.44 "
Water to make	1000 Cc.

This liquid has a handsome sky-blue color, and acts upon glucose in the usual manner.

On now substituting an equal quantity of pure soda for the potassa, the liquid ceases to react with glucose. It has a more intensely blue color than the potassic liquid.—*Compt. Rend.*, vol. 100 (1885), 803.

Solubility of Carbolic Acid in Liquid Paraffin (Pharm. Germ.) and in Benzin.

DR. SCHWEISSINGER has examined the solubility of *absolute* carbolic acid in liquid paraffin (Germ. Pharm.) and in petroleum benzin of sp. gr. 0.059, with the following results:

1 part of carbolic acid is soluble in

20 p.	of liq.	paraffin	at	44° C.
30 "	"	"	"	32° C.
40 "	"	"	"	24° C.
40 "	"	"	"	20° C.
60 "	"	"	"	17° C.

1 part of carbolic acid is soluble in

1 p.	benzin	at	43° C.	8 p.	benzin	at	20° C.
2 p.	"	"	42° C.	9 p.	"	"	27° C.
3 p.	"	"	41° C.	10 p.	"	"	25° C.
4 p.	"	"	39° C.	15 p.	"	"	23° C.
5 p.	"	"	37° C.	20 p.	"	"	21° C.
6 p.	"	"	35° C.	30 p.	"	"	19° C.
7 p.	"	"	32° C.	40 p.	"	"	16° C.

—*Pharm. Zeit.*

Cleaning Mortars.

SLODKI, of Nancy, recommends the following method for cleaning mortars which have been used in making preparations of iodoform. After having washed the mortar, or if greasy, having cleaned it with saw-dust, a little alcohol is poured in, ignited, and stirred about with the pestle. When all the alcohol is consumed, the mortar and pestle are washed with water, and all trace of iodoform will then have disappeared.—*L'Union Pharm.*

Detection of Morphine in the Urine of Morphine Tipplers.

NOTTA and LUGAN find that morphine taken internally may always be detected in the urine, if the quantity taken per day has not been less than 0.1 Gm. (or 1½ grain).

To detect it, they propose the following process:

One liter of the urine is treated with one-tenth its volume of subacetate of lead solution. The coloring and extractive matter, phosphoric, and uric acids, etc., are thereby precipitated, and in the colorless liquid the morphine exists as an acetate, together with the substances which are not thrown down by the lead solution. The excess of lead is removed by the addition of diluted (1:10) sulphuric acid, and the sulphate of lead filtered off. Ammonia is now added, together with one-tenth (of the volume of the liquid) of warm amylic alcohol, and the liquid briskly shaken for a few minutes. On standing, the amylic alcohol will separate as a clear liquid holding the morphine in solution. By agitating the separated amylic alcohol with water acidulated with sulphuric acid, the morphine is separated as sulphate, and may then be isolated and determined in the usual manner.—*Union Médicale.*

Shark-Liver Oil.

AN Irish pharmacist said to us the other day: "Do you know that in France they are obtaining *Cod-Liver Oil* from *Sharks?*" We did recollect having noted something to that effect, though in other words. It is difficult to credit the authenticity of a paragraph that has been going the round of the pharmaceutical press, which informs us that some enterprising American firm is making an artificial cod-liver oil by soaking herrings in olive-oil until it acquires a fishy flavor, then curing the herrings for sale and labelling the oil "secundum artem Ol. Gadui," etc. But it is perfectly true that a very superior quality of fish oil for medicinal purposes, to all intents quite equal to cod-liver oil, can be, and is obtained abundantly from the sharks which inhabit the Mediterranean. In the gulfs of Sicily, more especially that of Cantania, we have met with many varieties of the shark tribe, which, like the dog-fish of our own English coasts, are a constant source of annoyance to the fishermen, destroying their nets and feeding on the young fish which frequent those regions, or scaring them beyond the reach of the small boats. Some of these sharks are to be met with all the year, but the greater number arrive during the winter months when the water is cooler.

The oil obtained from the species of shark (*Squalus*) frequenting the Mediterranean is now abundantly met with in trade. The poorer classes of Italians buy it to light their houses. The quality used for this purpose is obtained over a naked fire by means of earthenware boilers; it has a dark color and a disagreeable odor, but it is cheap and economical for burning in lamps.

A better quality has been produced of late years in Sicily from the liver of the shark above mentioned, and this appears to be well suited for medicinal purposes. The livers are cut up into small pieces and thrown into water containing a little permanganate of potash (½ parts to 1,000). There the material remains for twelve hours. It is then transferred to a boiler constructed with a double bottom, the lower part of this vessel being filled with water. It is, therefore, nothing more than a large water-bath. By means of the regular equal heat thus obtained when the fire in the boiler is lighted, the oil is separated from the fatty tissues and collected as it rises to the surface. Whilst the tissue is still warm it is subjected to the action of a press, by which a second and inferior quality of oil is obtained. The latter is cloudy and odoriferous. It is purified by stirring it about in water containing a little chloride of lime (250 parts of chloride of lime for 20,000 parts of oil). After standing for two days it is filtered. The product is opalescent, has a sweetish taste, and, in spite of its low price, is considered by many Italian practitioners to be quite equal in therapeutic properties to the ordinary cod-liver oil of trade.—*Chem. and Drugg.*

Existence of Glycyrrhizin in Several Vegetable Families.

GLYCYRRHIZIN exists not only in several spices of Leguminosæ, but also in some plants of perfectly distinct families; for example, it occurs in large quantity in the rhizomes of *Polypodium vulgare*, which grows abundantly in the neighborhoods of Paris and Brest, and in the Vosges, also in the rhizomes of a variety of *P. semipennatifidum*, which grows on the temperate regions of the Andes. Both these plants are used as substitutes for licorice.

The best method of extracting glycyrrhizin is to treat the dried and powdered plant with acetic acid of 8°, mix the solution with alcohol, filter, evaporate the filtrate to a syrup, and add water, which dissolves out ammonium acetate and other impurities, but leaves the glycyrrhizin undissolved.

The paper concludes with a summary of the chemical history of glycyrrhizin. — E. GUIGNET in *Compt. Rend.*

Subnitrate of Bismuth Manufacture.

ON a recent trip through France and Germany we picked up a few practical notes, says a correspondent of the *Chemist and Druggist*, which we now extract from our diary. We found at Strasburg that the manufacture of subnitrate of bismuth had engaged the attention of two practical men, Schlagdenhauffen and Reeb. The process carried out there is simple and elegant: 1 part of bismuth nitrate in large crystals is rubbed up with 4 parts of boiling distilled water, and then 21 parts more of boiling water are added. The nitrate in large crystals, which forms the basis of the operation, is obtained from the nitric solution of the metal, this solution being still strongly acid. When these crystals are small, soft, and fragile it is a sign that the solution which produces them has been evaporated too far, and that there has occurred to some extent a formation of basic nitrate, which, later on in the process, will yield a subnitrate with a yellowish tinge. This is to be avoided. Well carried out, the process gives a subnitrate having a constant composition: 6 atoms of oxide of bismuth, 1 of nitric acid, and 9 of water; or, in 100 parts, oxide of bismuth, 79.86; nitric acid, 15.50; water 4.64.

This is a product very superior to some of the old-fashioned preparations, especially those in which, according to the old recipes, a certain quantity of chloride of sodium is used, which, of course, produces a corresponding, or equivalent proportion of *subchloride.* The subnitrate obtained, as above stated, by the action of boiling distilled water on the large crystals, is collected upon a cloth and only washed with two parts of water, after which it is immediately placed to dry in small parcels upon white filtering paper, and at a temperature which must on no account exceed 30° to 35° centigrade.

One thousand parts of crystallized nitrate thus yield about 450 parts of subnitrate (corresponding to 320 parts of metallic bismuth). There remain, therefore, in the mother waters some 200 parts of bismuth (metal). This is entirely precipitated by carbonate of ammonia, or more economically, by carbonate of soda. When this *carbonate of bismuth* is recently precipitated and is still moist, it is easily dissolved in nitric acid, yielding a solution from which, with a little care, the large crystals of bismuth nitrate can be obtained. If dried, it had better be calcined and reduced to metallic bismuth, which can be easily achieved at a moderate temperature by taking for every 10 parts of the calcined (oxide of) bismuth, 2 parts of cyanide of potassium, 0.4 part borax, and 0.8 part charcoal; which mixture is fused in a Hessian crucible, and soon yields a large button of pure metal.—*Chem. and Drugg.*, April.

Separation and Determination of Methylic Alcohol in Presence of Ethylic Alcohol.

THE process is based on the fact that methyl oxalate dissolves readily in water, whilst ethyl oxalate is sparingly soluble, and both oxalates form with ammonia amides perfectly insoluble in water. In 10 C.c. of the alcohol in question, there are dissolved 10.8 Gm. oxalic acid, and the solution is saturated with hydrochloric acid gas. After standing for 24 hours in a well-stoppered bottle, 2 C.c. of the solution are mixed with 10 C.c. of water, shaken up and filtered. As methyl oxalate is completely soluble in water, there is obtained, on adding ammonia, more amide than if an equal quantity of pure ethylic alcohol had been employed. By a number of experiments we may ascertain the quantity of oxamide formed in the washing waters of the ethylic oxalates. For absolute alcohol the mean is 6.6. For methyl oxalate the mean is from 14.65 and 15 per cent on the quantity of the methylic alcohol.

If a mixture of methylic and ethylic alcohols is etherified, shaken up with water, and the filtrate mixed with ammonia to precipitate the amides, the proportion of methylic alcohol may be calculated from the quantity of oxamyde obtained.

For every one per cent of methylic alcohol we obtain from 0.14 to 0.15, more than 6.6 per cent.—C. DE PONCY in *Chem. News*, March 6th.

Elimination of Phosphoric Acid in the Urine in Insanity and Epilepsy.

A. LAILLER'S results (*Compt. Rend.*, 99, 572), obtained from many hundred analyses made while resident officer in a large asylum, agree with those of Mairet. In acute delirium, phosphoric acid and urea are eliminated in notable excess; in excitable mania the phosphoric acid is in slight excess, whilst the amount of urea is normal; and in simple insanity the urine has the normal composition. In acute or excitable lypemania, the amount of urea eliminated is abnormally high, whilst that of phosphoric acid is abnormally low. In simple lypemania the composition of the urine is normal.

In general paralysis the elimination of both phosphoric acid and urea is related to the general morbid conditions of the patient. At, or immediately after, epileptic seizures, the urine contains a high proportion of phosphoric acid and a low proportion of urea. If the seizures succeed one another rapidly, the proportion of both phosphoric acid and urea is increased; in the interval between seizures the urine has the normal composition. — *Journal Chem. Soc.*

CORRESPONDENCE.

Status of Hospital Stewards in the Army.

SIR:—I am informed that it was through the efforts of the American Pharm. Association that the Hon. Mr. Randall introduced a bill in Congress, last session, to raise the standard of hospital stewards of the army and naval apothecaries. Probably, another effort in the same direction could be made next session; for, surely, if any class of apothecaries in the world needs favorable legislation, it is the hospital stewards. Our social status is no better than that of the common soldier, and our wives and daughters are "snubbed" by the commissioned aristocracy, and classed with the washerwomen and servants of the officers. Our pay is the pitiful sum of $30; our allowances, one room back of the hospital, with the post-surgeon's stables or in the hospital building, one stove, one ration per day, one cord of wood per month, and uniform allowances (quantity and quality) of a private soldier. Not long since, I, a graduate of pharmacy of ten years' experience in the profession, was ordered to "*button up my blouse*," and threatened with a court martial for appearing in other shoes than those issued by the government, which are heavier and coarser than those worn by plow-men, by a second lieutenant whose qualifications are doubtful, and who owes his appointment to the great, grand, and glorious position he occupies to the fact that his father is a politician.

Even commissary sergeants, whose duties are simply those of a grocery clerk, weighing out the coffee and sugar for the people of the garrison, and the quartermaster sergeant, who "bosses" the mules and wagons of his department, draw $4 per month more pay than the hospital steward. We are required to not only compound all medicines used in the post, but to extract teeth, dress wounds, care for the sick, conduct the hospital mess, make weather observations, perform all clerical duty (not a small item by any means), assist the surgeon in charge in performing surgical operations, and during his absence often take entire charge of the medical department of the post. We are also responsible for all government property belonging to the hospital. To obtain this position, we are required to pass a technical examination "in English language, chemistry, pharmacy, materia medica and minor surgery, capacity for compounding and preparing medicines, physical condition, moral character, ability to control men and manage an ordinary hospital, as well as general aptitude for the position." (I quote the exact regulations on the subject.)

The stewards of the army united in a petition to Congress, last year, through our chief (the surgeon-general), for an increase of our pay to $40, but our very inferior social and military status prevented it from having any weight, or more than receiving a passing notice. The naval apothecaries are not so bad off, not being enlisted men, and having the social standing of "warrant officers." The stewards have even appealed to be placed on an equality with the naval apothecaries, but in vain.

Cannot the American Pharmaceutical Association do something for us? We have made all efforts that we are able to make, many of us even spending half or more of our small salaries in that direction. We are not so "ambitious" as the March number of the AMERICAN DRUGGIST expresses it, but only anxious for justice and equity. We do not care to rank as lieutenants, for it matters little as to the *title* that may be given us; but, in justice to our profession, give us a social and military standing a little above that of the private soldier, and pay enough to support our families without taking in washing to do it. Hoping to be assured that an early effort will be made to lift us out of the slough of despond, I remain yours truly,

HOSPITAL STEWARD U. S. ARMY.

Pharmaceutical Legislation in Michigan.

Editor of American Druggist.

DEAR SIR:—In an editorial in your April number, you express a good deal of surprise that it should have been considered necessary to eliminate the sections relating to adulterations, and the sale of poisons from the Michigan pharmacy bill, in order to enable the bill to pass. The sections referred to were not removed simply to secure the *passage* of the bill, but to render the bill *constitutional*, in the event of its passage.

The constitution of the State of Michigan, sect. 20 of Art. IV., provides that "no law shall embrace more than *one* object, which shall be expressed in its title." In view of the possible danger that the courts might construe "the practice of pharmacy," "the sale of poisons," and "the adulteration of medicines," as being *each* a *separate* object, and thus destroy the validity of the law, it was deemed prudent on the part of the committee in charge of the pharmacy bill, acting under competent legal advice, to remove the sections referred to. There is now a "poison act," and also an "adulteration act," on the statute books of the State, and should further legislation be desired in these directions, the present laws can either be amended, or other laws passed to take their place.

Yours respectfully,

GEO. MCDONALD,
Chairman of Committee on Pharmacy Bill.

KALAMAZOO, MICH.

Source of Todd's Menthol.

SIR:—Mr. Christy, in his letter 1,450, in reply to your answer to "C. A. D.," 1.414, after saying you have had it recorded in your paper that he is the introducer of the Japanese menthol plant, makes a statement that he furnished Mr. A. M. Todd with his stock of plants.

I have always understood that Mr. Tood manufactured his menthol from *Mentha piperita* and on this account his menthol was distinguished from the Japanese article by having the name "Pipmenthol." Now, does Mr. Todd make his menthol from *M. piperita* or *M. arvensis*?

"MENTHOL."

Composition of "Patents."

Editor American Druggist.

SIR:—In the April number of the DRUGGIST I see the formula of Hamlin's Wizard Oil, asked for. Here is a fair imitation, if not the *genuine*.

℞ Water of Ammonia . . ℥ ij.
Spts. Ammonia Aromat . . ʒ ss.
Sulph. Ether . . . . . ʒ i.
Oil Sassafras,
" Cedar,
" Gaultheria,
Tr. Myrrh,
" Camphor . . . . . āā ℥ ss.
" No. Six . . . . . ʒ vi.
Chloroform . . . . . ʒ ij.
Alcohol q. s . . . . . Oi.
M.

The DRUGGIST is read with pleasure by

A. Q. NASH.

SHERMAN, TEXAS.

American Druggist.

In Queries and Answers you ask for formulæ for Bareel's Indian Liniment and Hamlin's Wizard Oil. The following are those we have frequently used:

BAREEL'S INDIAN LINIMENT.

℞ Tr. Capsicum . . . . . 1 oz.
Oil Origanum,
Sassafras,
Pennyroyal,
Hemlock . . . . . āā ½ oz.
Alcohol . . . . . 1 qt.
M.

HAMLIN'S WIZARD OIL.

℞ Spts. Camphor . . . . . 2 oz.
" Ammonia,
Ol. Sassafras,
" Turpentine,
Chloroform . . . . . āā 1 oz.
Oil Cloves . . . . . ½ oz.
Alcohol q. s . . . . . 10 oz.
M.

Yours Truly,
W. H. & SON.

MONROE, MICH.

Inclosed find formula for *Hamlin's Wizard Oil*, as asked for in your journal of April, taken from Kilner's "Modern Pharmacy and Druggists' Formulary," viz.:

Tinct. Camphor . . . . . 1 ounce.
Water of Ammonia . . . . ½ "
Oil Sassafras . . . . . ½ "
Oil Cloves . . . . . 1 dr.
Chloroform . . . . . 2 "
Oil Turpentine . . . . . 1 "
Alcohol . . . . . 3½ ounces.
Mix.

Yours respectfully,
H. and W. KEPHART.

BERRIEN SPRINGS, MICH.

Abbreviations of Metric Terms.

THE International Congress of Metrical Weights and Measures has adopted the following new abbreviations. *Italics are to be used, and are not to be followed by a period.* The abbreviations are to be written on the same line as the figures, and after the last of them, be the number either an entire one or a decimal:

Length.

Meter	*m*
Decimeter	*dm*
Centimeter	*cm*
Millimeter	*mm*
Kilometer	*km*

Surface.

Square meter	m^2
" decimeter	dm^2
" centimeter	cm^2
" millimeter	mm^2
" kilometer	km^2
Hectare	*ha*
Are	*a*

Volume.

Cubic meter	m^3
" decimeter	dm^3
" centimeter	cm^3
" millimeter	mm^3
" kilometer	km^3

Capacity.

Liter	*l*
Deciliter	*dl*
Centiliter	*cl*
Hectaliter	*hl*

Weight.

Kilogramme	*kg*
Decagramme	*dkg*
Gramme	*g*
Decigramme	*dg*
Centigramme	*cg*
Milligramme	*mg*
Ton of 1,000 kilogrammes	*t*
Quintal of 100 "	*q*

Simple Method of Examining Yeast.

A SMALL piece of the compressed yeast is placed in a wine glass which is filled with water at 25°. If the yeast is active, it will rise to the surface in 1½–2 minutes; if less good it will require 5 minutes before it rises. Bad yeast will not rise at all.—O. MEYER in *Bied. Centr.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,493.—**Cocaine** (M. O).

This correspondent asks our opinion on the correct pronunciation of the word *cocaine*, which one of our contemporaries has recently said should be pronounced as if it were spelled "kokane," with the last syllable having the same sound as the verb "maintain."

In reply, we have to say that we do not think this pronunciation at all tenable. There may be some arguments advanced in favor of "fonetic riting," but we do not think a converse process applicable to pronunciation. The termination *ine* (pronounced *een*) is regularly used in the case of all alkaloids. This is affixed either to the unaltered name of the drug or plant, as, for instance:

Ergot-ine,
Piper-ine,

or the termination of the name of the plant is curtailed or altered for euphony's sake:

Caffea: caffe-ine (three syllables)
Spartium: sparte-ine "
Similarly: code-ine "
" theba-ine "
" narce-ine "

Consequently we have from

Coca: coca-ine (ko-ka-een.)

No. 1,494.—**Ferro-Phosphated Elixir of Calisaya and Strychnine** (R.).

This correspondent wants a formula for this preparation, which could be made from some of the more simple elixirs contained in the N. Y. and B. Formulary.

We would suggest that he start with No. 14, viz., *Elixir Cinchonæ et Ferri*, and add to it the usual amount of strychnine. The formula would then be:

Phosphate of Iron (U. S. Ph., 1880)	256 grs.
Citric Acid	5 grs.
Sulphate of Strychnine	2½ grs.
Boiling Water	1 fl.oz.
Compound Elixir of Quinine enough to make	16 fl. oz.

Add the phosphate of iron, sulphate of strychnine, and citric acid to the boiling water, and dissolve. Then add enough compound elixir of quinine to make 16 fl. oz., and filter.

Each fl. drachm contains 2 grs. phosphate of iron and $\frac{1}{16}$ gr. sulphate of strychnine.

For the benefit of readers who do not have the N. Y. and B. Formulary at hand, we repeat here the formula for *Elixir Quininæ Compositum*.

Sulphate of Quinine	16 grs.
Sulphate of Cinchonine	8 grs.
Simple Elixir	16 fl.oz.

Triturate the alkaloid salts with a portion of the elixir, then mix with the remainder, and agitate until the salts are dissolved. Finally filter.

No. 1,495.—**Sulphur Disinfection.**

If properly performed, this is amply efficient in all cases where organic life, as the cause of infection or nuisance, is to be destroyed. It is infallible with all larger or smaller animals, and also with insects. In the case of certain bacteria, some doubt has been thrown on its efficacy, but if long enough continued and properly carried out, it will probably accomplish the purpose in the end.

In the French Army Formulary (or Military Pharmacopœia) great stress is laid on the efficacy of sulphur vapor as a destroyer of parasites and insects in barracks, stables, etc., and against contagious germs in general, even such as have penetrated into the walls.

In the collective experience of French army surgeons, 30 Gm. (1 avoird. ounce) of sulphur is sufficient for each square meter (35.3 cubic feet) of space. A sanitary commission at Val-du-Grâce, examining the subject in 1881, ascertained that 15 Gm. is enough in all ordinary cases. Sometimes, however, 30 are required; *sometimes*, and as it is better to err on the side of safety, the commission recommended to use the larger quantity at all times. During an epidemic still larger quantities may be used.

No. 1,496.—**Aromatic Ammoniacal Tincture** (Dr. J.).

The above title which our correspondent met with in a translation from a French journal refers, without doubt, to the French equivalent for our aromatic spirit of ammonia, or *Alcoolatum aromaticum ammoniacale* (Alcoolat aromatique ammoniacal), which is prepared as follows:

	Gm.
Fresh Orange Peel	100
Fresh Lemon Peel	100
Vanilla	30
Ceylon Cinnamon	15
Cloves	10
Chloride of Ammonium	500
Carbonate of Potassium	500
Distilled Cinnamon Water	500
Alcohol, 80%	500

Cut the orange and lemon peel, and the vanilla, reduce the cloves and cinnamon to coarse powder, and introduce the mixture into a glass-retort, together with the chloride ammonium, cinnamon water, and alcohol. Let it macerate 3 or 4 hours, occasionally agitating. Then add the carbonate of potassium, mix thoroughly, and, after several hours, distil on a water-bath until 500 Gm. of distillate have passed over.

The product becomes soon colored when exposed to light.

No. 1,497.—**Bleaching Straw Hats** (A.).

This correspondent is the proud possessor of a very fine Panama hat which he desires to bleach himself, evidently in anticipation of the approaching season. If we were in *his* case, we would intrust the task to some professional hat-bleacher, who would accomplish the object probably more quickly, cheaply, and with less trouble than we could do it ourselves. However, as he is bent on the undertaking, we will describe a process:

First wash the hat, freed from all trimmings, lining, etc., thoroughly with soap-suds, using a soft brush. Then rinse it thoroughly, until every trace of soap or alkali is removed. Having dissolved 8 oz. of hyposulphite of sodium in 2 gallon of water, immerse the still moist hat in this liquid (using more of it, if necessary, of the same strength), and leave it for about 15 minutes. Then take it out, add to the liquid 8 oz. of common hydrochloric acid, mix quickly, and at once re-immerse the hat. The bleaching action due to the separation of sulphurous acid takes place, not only on the surface of the fabric, but also in the straw fibres themselves, as they had previously soaked up some of the hyposulphite solution. The hat should remain in the liquid for at least half an hour, during which time the vessel should be kept well covered.

If one bleaching is not sufficient, the process may be repeated.

Another method is to immerse the hat in a solution of permanganate of potassium in water (1 oz. to 1 gallon) and afterwards in dilute hydrochloric or sulphuric acid.

No. 1,498.—**Chinoline** (S. S.).

This artificial alkaloid, which was used some years ago (in form of tartrate) as an antipyretic, is now no longer employed medicinally, owing to certain drawbacks connected with its administration, chief among which is the peculiar aroma and taste which are disagreeable to many persons.

Chinoline, however, has been the starting point for the discovery of several other very valuable antipyretics which are derived from it. One of these is kairine (now also going out of use), and another is antipyrine, which latter still maintains its reputation as an efficient substance for reducing febrile temperatures.

Concerning the chemistry of chinoline, it may first be noted that this substance was discovered by Runge in coal-tar, in 1834, and termed "leucol" (*white-oil*). Gerhardt afterwards (1842) obtained it by distilling cinchonine with caustic potash. Finally, A. W. Hofmann (1843) showed that chinoline is identical with Runge's leucol. Since then chinoline or quinoline has been prepared artificially by several methods, but it was not until 1880 that Skraup (and Koenigs) discovered a simple process by which it could be prepared cheaply and on a large scale. The process is as follows:

Mix 24 parts of nitrobenzol, 38 parts of aniline, and 120 parts of glycerin, in a flask of the capacity of 2,000 parts, and provided with an upright condenser. Next add 100 parts of concentrated sulphuric acid, and shake the mixture until the aniline sulphate, which had been formed, is entirely dissolved. Then heat on the sand-bath until when the reaction begins, remove the flask until reaction slackens, and continue alternate heating and withdrawing heat until but little unaltered nitrobenzol is present. Now add water, and drive over the unchanged nitrobenzol by heat. Render the residue alkaline, and drive over the mixture of chinoline and aniline either by steam, or extract them by ether. Separate these two bodies as much as possible by fractional distillation, and remove the last traces of aniline by treating the base in sulphuric acid solution, with bichromate of potassium. When the oxidation is completed, render again alkaline, and drive the chinoline over by steam. The yield of pure chinoline amounts to 70 to 75 per cent of the mixture of aniline and nitrobenzol.

Chinoline is a colorless liquid, boiling at 238° C., of spec. grav. 1.094 at 20° C. With acids it forms crystalline salts.

In its chemical constitution it may be regarded as naphthalin (see the diagram in our last volume, page 239), in which *one* CH group is replaced by nitrogen.

No. 1,499.—**Glycerite of Tragacanth** (M. S.).

An improved formula for this preparation has lately been proposed by the permanent Pharmacopœia Committee of the Germ. Pharm. Association. It is as follows:

Tragacanth, powd	1 part.
Alcohol	5 parts.
Glycerin	100 "
Wheat Starch	10 "
Water	15 "

Triturate the tragacanth with the alcohol, then add the glycerin and the starch, previously mixed to a smooth

milk with the water, and heat on the steam-bath until the mixture is of the proper consistence.

No. 1,500. — **Glycerite of Alum** (F.).

This preparation was recommended some time ago by Dr. R. W. Parker (*Brit. Med. Journ.*, January 24th), as a shbstitute for glycerite of tannin, as a powerful local astringent. It is less harsh than tannin, and is not incompatible with iron salts. It may be used diluted with water, as a gargle or wash, or even as an injection. It is prepared by dissolving

Powdered Alum.....1 part
In Glycerin.....5 parts

with the aid of a gentle heat.

No. 1,501.—**Cantharidal Collodion** ("Ana").

Cantharidin has been proposed repeatedly for preparing this collodion. One of the last formulas which we have seen is that proposed by Eugen Dieterich, the well-known German manufacturer of plasters and other products.

Dieterich's original formula was:

Cantharidin..... 3 parts
Collodion.....1,000 "

and this would have corresponded to the quantity of cantharides prescribed by the German pharmacopœia for blistering collodion, namely, 50 parts of cantharides represented by 50 parts of the product.

It was, however, subsequently found that a portion of the cantharidin crystallized out when the temperature fell, until only 1½ parts remained in solution. But as the product even now acted quite energetically, it would be a waste to make the solution stronger. Dieterich, therefore, proposes the following formula for

Collodium cum Cantharide.

Cantharidin ..... 3 parts
Collodion.....1,900 "
Oil of Rape..... 97 "

The oil of rape is added for the purbose of rendering the collodion elastic or flexible.

The blistering collodion of the U. S. Pharm. is considerably weaker than that of the German Pharm., 100 parts of the product corresponding to only 60 parts of cantharides instead of to 100 as in the German.

Dieterich also drew attention to the fact that the new French Pharm. (Codex) required cantharides to contain 0.5 per cent of cantharidin. According to his own experience, however, the quantity never exceeds 0.3 per cent. Hence the above figure must be an error.

No. 1,502.—**Cannabinon** (J.).

This is the name of a new product recently prepared from Cannabis indica, and put upon the market. It was at first prepared only by one firm, but is now also manufactured by E. Merck and others. When cold, it has the consistence of a soft extract, when heated it appears as a viscid, brown balsam, transparent in thin layers, of a strongly aromatic odor and a sharp, bitter, and somewhat scratching taste. It is insoluble in water, easily soluble in alcohol, ether, petroleum ether, chloroform, benzol, bisulphide of carbon, ethereal and fixed oils. The solutions are golden-yellow when strongly diluted, brown when concentrated. When heated on platinum foil it leaves no residue. Its true chemical nature is not known.

The experience of practitioners so far on record shows that cannabinon acts as a sedative and soporific, in doses of 0.05 to 0.1 Gm. (¾ to 1½ grains), without producing disagreeable effects on waking.

Owing to its soft consistence, it is not easily dispensed in its original condition. Merck, therefore, has prepared from it a 10 per cent trituration in form of a dry, brown powder, the average dose of which is about 0.7 Gm. (ab. 10 grains).

No. 1,503.—**Local Pharmaceutical Organizations** (Inq.).

We are informed by the secretary of the N. Y. State Pharm. Assoc. that besides the organizations in New York City and Brooklyn, there are county organizations in Albany, Erie, Broome, Chemung, and Steuben counties.

No. 1,504.—**Lafayette Mixture** (T. A. F.).

This is a gonorrhœa mixture much used in this section of the country. In New York it is very generally used in the hospitals and dispensaries. Its formula is as follows:

Balsam of Copaiba.....½ fl. oz.
Spirit of Nitrous Ether....½ " "
Comp. Spirit of Lavender.½ " "
Solution of Potassa.....1 fl. dr.
Mucilage of Acacia enough
to make.....4 fl. oz.

Mix the balsam with the solution of potassa, then add the two spirits. Put the requisite amount of mucilage into a bottle, pour the other mixture on top, and mix the whole by agitation.

In some institutions, it is customary to use equal volumes of mucilage and syrup instead of mucilage alone.

No. 1,505.—**Druggists' Formulary** (J. A. R.).

This correspondent asks for "the name of some reliable druggists' formulary or handbook, where he can obtain price, etc.," and his query is capable of two constructions, viz.: he may wish a formulary in which he can also find the cost of ingredients, or else, the name *and* price of a formulary. If the former, we cannot answer. If the latter, there are numerous useful formularies, for instances: Griffith's Universal Formulary (last edition by Maisch); the New York and Brooklyn Formulary, Fenner's, Nelson's, and others, the cost of all of which had better be obtained from some regular book-dealer, as, for instance, J. H. Vail & Co., 21 Astor Place. It is out of our power to pick out one from among the list, as we cannot know what our correspondent expects to find in them. If he can afford it, he should procure them all.

No. 1506.—**Syrup of Dover's Powder** (Inquirer).

Mr. Frank U. Ferguson gives the following formula, in the *Weekly Drug News*:

Dover's Powder (U. S. P. '80)..640 grains.
Water.....q. s.
Glycerin.....2 oz. av.
Sugar.....12 oz. av.

Macerate the Dover's powder in about 8 fl. oz. of water for about twenty-four hours, then filter and add enough water through the filter to make the filtrate measure 8 fl. oz. To the filtrate add the sugar, and dissolve with a gentle heat; then add the glycerin and strain.

The finished syrup represents in one fluidrachm five grains of Dover's powder.

No. 1,507.—**Sale of Liquors** (B. F. R., Mass.).

We are asked the following question: "Can a druggist sell liquor on a physician's prescription in a town where there are no licenses granted?"

A lawyer would tell our inquirer, that the question is too general to be answered categorically. All concomitant circumstances, conditions, existing laws, ordinances, and judicial decisions bearing on the subject should be carefully considered in deciding the point. However, we can say the following.

In the first place, we hold that the physician has an unalienable right to prescribe for his patient, and the pharmacist an unalienable right to supply on the physician's order, any article that may be necessary to save the life or treat the malady of the patient, provided each of them is legally authorized to pursue his profession, and cannot be shown to have ordered or furnished the article (in this case, liquor) under false pretenses. This question, so far as we know, has never been decided by the highest courts, but if it ever is adjudicated there, we have no doubt it will be decided in this sense.

The right above vindicated for physicians and pharmacists may, however, be regulated to a certain extent by legislation. Should any State enact a law of prohibition, for instance, this prohibition could never extend to the total suppression of alcoholic liquids, even for use in the arts or in medicine; for this can be construed as opposed to the Constitution of the United States. But when a State restricts the sale of alcoholic beverages, it has a perfect right to establish special regulations how such liquids may be obtained, and under what conditions they may be used for technical or medical purposes, and it has also a right to establish special depots for their sale, or appoint special persons who alone may sell them. If there is, for instance, a special person officially authorized, in the town of our correspondent, to sell alcoholic liquids to persons presenting valid vouchers for the same, and if, at the same time, the law interdicts all other persons from selling such liquids, we think the law will stand, as the right of the people to make use of these liquids is not interfered with, and the State adopts this system only with a view of preventing these liquids from being used for illegitimate purposes.

Supposing again, there is no such official agent or person in a town, and the town-authorities, at the same time, have refused to grant licenses to liquor dealers, so that, in fact, there is no person in the whole place who is expressly authorized to sell—even restrictedly—any alcoholic beverage, then we hold that the pharmacist has the right, in a *bona fide* case, to fill a physician's prescription for liquor. But this must be done in such a manner that no doubt can be raised as to the legitimate use of the article.

We will not argue, in this place, on the wisdom of prohibition or license (though our strong conviction is on the side of the latter). But when the people in a town have once decided—and have been apparently by law authorized to decide—that the promiscuous traffic in liquor should be suppressed, it is a necessary consequence that they shall be entitled to adopt regulations to accomplish this. A pharmacist, then, residing in the town, must bear his share of responsibility and burden. But, in our humble opinion, we do not think that the people have a right to step between the patient and the physician, and to say to the latter, "this drug and this substance you may be allowed to use, but that substance you shall *not* use, no matter whether in your judgment the patient may need it."

No. 1,508.—**Soluble Essence of Ginger** (J. S., Philadelphia, Pa.).

Of course, there is no such thing as a regular fluid extract of ginger which is soluble in water. The resin and volatile oil on which the pungency and aroma of ginger depend can only be made partially to dissolve in water. The resin can be rendered much more soluble than the oil by combination with an alkali. So far as we know, Tresh's

method is probably the best. It is as follows:

Take of strong tincture of finest Jamaica ginger 1 pint. Add to it small proportions at a time of finely powdered slaked lime, until the tincture ceases to lose color, throw the whole upon a filter and pass through the residue diluted alcohol, until the product measures two pints. Now add drop by drop diluted sulphuric acid, until the rich yellow color suddenly disappears, let stand for 24 hours, filter, dilute with water to 4 pints, then shake with a little powdered pumice or silica (*by no means* lime or magnesia), and filter it at 0° C., if possible. As the lime is added, the color deepens, but becomes lighter with greater additions. The product is very pale, but may be darkened by adding a drop or two of potash solution. The *Chem. and Drugg.* commented on this, saying: Working on somewhat similar principles, we have mixed the tincture with its own bulk of water before adding the lime, then mashed the lime with a little proof spirit, mixed the two liquids, shaking finally with fine sand, and laid aside until required, then filtered. The aroma may be improved by the addition of a few drops (to the pint) of essential oil of ginger.

No. 1,509.—**Pharmaceutical Still** (J., Minneapolis, Minn.).

This correspondent wants to know which pharmaceutical still obtainable in the market is the most practical one for a pharmacist's laboratory.

This is a question which we cannot answer point-blank. If any one has been in the habit of using a particular kind of still, it is quite natural that he will prefer it to some other form or make. Again, there are features connected with one kind of still which may not be connected with another. As we have not tried any of the stills sold in the market ourselves, but have used our own design and construction, we can only say that those who have used the stills mentioned by you, and whom we know, have generally been fully satisfied by their working.

No. 1,510.—**Ferrated Wine of Wild Cherry** (G. P. H., Ellsworth, Kan.).

We have used the following:

1. Wine of Wild Cherry.

Wild Cherry Bark	4 oz.
Angelica Wine	8 fl. oz.
Water	q. s.
Sugar	2½ oz.

Macerate the Wild Cherry Bark, which should be in coarse powder, in 8 fl. oz. of water in which the sugar had previously been dissolved, for 12 hours. Then strain, wash the bark with enough water to obtain 8 fl. oz. of infusion and mix this with the wine.

2. Ferrated Wine of Wild Cherry.

Tasteless Tincture of Iron	640 min.
Wine of Wild Cherry, to make	16 fl. oz.

Whether this has the same taste and appearance as the particular commercial brand you mention we cannot say, as we have no personal experience with the latter.

No. 1,511.—**To Make Cisterns and Tanks Water-tight** (D. F. V.).

Our correspondent refers to a formula published by us in NEW REM., 1881, p. 190, which is as follows:

"Paint thickly on the inside with a mixture composed of 8 parts of melted glue and 4 parts of linseed oil boiled with litharge. In forty-eight hours the application will have hardened, so that the cistern or tank can be filled with water."

He wants further instruction regarding the preparation. We regret that we cannot now trace the source of the formula, but we can give this much of information, that the boiling of the linseed oil with the litharge (of which about 30 parts are necessary for every 1,000 parts of the oil) has for its object to render the linseed oil more rapidly drying. In fact, it makes it what is generally called "boiled linseed oil." "Melted glue," of course, means glue that has been soaked first in cold water, then drained, and afterwards melted. It is impossible to melt dry glue by heat. If this is attempted, the glue will turn to whitish bean-like lumps caused by a sudden dissipation of excess of moisture, and afterwards will become dark colored, give out offensive odors, and burn.

The glue having been soaked and melted, should then be raised to a temperature considerably above the boiling point of water, care being, however, taken that it does not become burned. When quite hot, the boiled oil is stirred in, and in a few minutes afterwards the mixture will be ready for application. It must be kept hot, since it becomes solid and tough as it cools. We have tried it on pasteboard boxes, and have found it to make them water-tight.

No. 1,512.—**Golden Hair-Dye** (F. D. B., Darlington, Ind. Ter.).

The best agent to produce a "golden" tint on *dark* hair is peroxide of hydrogen solution, cautiously and repeatedly applied. The hair must be thoroughly cleansed first, so as to remove all fatty matter, and may then be treated with the peroxide in moderately dilute (not over 5%) solution. If the tint of the natural hair is *light*, peroxide of hydrogen will not do. Natural hair on the human head should never be continuously or frequently dyed with metallic salts, but if, for some special occasion, a dye is needed, the following may be used to produce this tint. Take a solution of chloride of tin (stannic chloride), diluted with a sufficient amount of water, and moisten the hair with it. Then apply a *dilute* sulphide of ammmonium solution, which should be freshly prepared and colorless. The latter is obtained by saturating a quantity of water of ammonia with hydrosulphuric acid, and then adding an equal volume of water of ammonia.

No. 1,513.—**Preserving Fruit** (Wm. K., Mexico).

Our space permits us to give only a condensed account of the processes. There are several methods, differing chiefly in the preservative agent employed, the most common being that in which sugar is used.

1. *Preserving with Sugar.*

The fruits must be carefully selected, as fresh and sound as possible, and not too ripe. For each pound of fruit one pound of best white sugar is taken, one pound of water added, and heated in a clean copper or enamelled boiler slowly to boiling, care being taken that the sugar is dissolved before the syrup boils. The syrup is carefully skimmed and poured over the fruits, or the fruits placed in the syrup, the whole raised once more to boiling, and the liquid then drained off the fruits. It is boiled down until it begins to be slightly viscid; the fruits having been put into the preserving vessels, the thick liquid is poured on so as to entirely cover them. If possible, the vessels should be placed for a short time in boiling water, after which they must be securely closed.

The above method will only answer with fruits which are not easily broken or disintegrated by the process—for instance, with pine-apples, pears, etc.

Delicate fruits are simply covered with boiling syrup. In certain cases the process needs some modification, but the nature of the fruit itself will generally suggest this.

Cold syrup may also be used, provided it has previously been thoroughly boiled and skimmed, and treated with salicylic acid, of which from 100 to 200 grains may be used for every gallon of syrup.

2. *Preservation without sugar.*

This may be accomplished in various ways.

The fresh fruit may be placed in tin cans of proper size, which must be completely filled and then soldered up. A small pin-hole having then been made in the top of each can, and the cans having been placed into a vessel containing hot water, reaching to within about one-half inch of the top of the cans, heat is applied to the water-bath until all the air is expelled from the cans, when the holes are immediately soldered up. On cooling, a vacuum will be produced, and the top and bottom of each can will appear slightly depressed inwards.

A good plan is to put the cans into the empty boiler or water-bath, and then to pour boiling water into the latter. By contact with the cans this will lose much of its heat, but on subsequently re-heating it care must be taken not to raise it to a boil. The most suitable temperature is about 200° F. To ascertain when all the air has escaped from the cans, place a drop of water now and then over the pin-hole. When the drop is no longer disturbed by escaping air, solder the can up.

Very good results are obtained by employing certain chemical preservative agents. Among these are:

Bisulphite of sodium, of which an aqueous solution may be made, 1 to 2 oz. to the gallon, which may be poured over the fruit, previously cleaned and pealed. The bisulphite has also a bleaching effect, and is, therefore, chiefly suitable only for such fruits as are naturally without much color, such as pears, peaches, apples, etc. The fruit preserved in this manner is, of course, not suitable to be eaten *as such*, like sugar-preserved fruit, but needs further culinary preparation.

There is so little of the bisulphite retained in the fruit that the latter, even when eaten unprepared, would be perfectly harmless. The further treatment of the fruits, however, entirely destroys this salt, and leaves only its products of decomposition.

Some years ago a preserving salt was announced in Germany, which was said to be produced by melting together 4 mol. of crystallized boric acid and 1 mol. of phosphate of sodium at 120° C., whereby an acid phosphate of sodium is produced, which "is then further melted at 130° C., together with an equivalent quantity of nitrate of potassium and chloride of sodium. When cold, the product has a glossy appearance, has an acid reaction, is soluble in 3½ parts of water. It is said that from ¼ to ½ oz. of this salt [presumably dissolved in sufficient water to cover the fruit] is sufficient to preserve two pounds of fruit.

Another good preservative agent is *boroglyceride*, about which full information will be found in previous volumes of this journal (for instance, 1884, p. 41), of which a watery solution, containing about 5%, may be used.

Salicylic and boric acids are likewise excellent preserving agents. The former has at one time been reported to be injurious, as it was said to impair the generative functions. But this is no longer maintained, at least for the small quantity of the salt likely to be taken with the food preserved by it.

Boric acid has also been repeatedly warned against as being injurious, but the leading authorities declare it to be entirely innocuous.

A saturated solution of boric acid, therefore, may be unhesitatingly used. For preparing this, about 18 grains of boric acid are required for each fluid ounce of water.

Glycerin has also been recomended as a good preservative. The direc-

tions are to dilute it with 3 parts of water, and to cover the fruit with it. We have no knowledge of any recent practical experiments with this process.

When salicylic or boric acids are used as preservatives, it is recommended to add a little sugar to the liquid to prevent the fruit from becoming stringy or tasteless in the course of time.

No. 1,514.—**Treatise on Practical Pharmacy** (L. F. M.).

The best works on this subject are the following:

Parish's "Treatise on Pharmacy."—Proctor's "Lectures on Practical Pharmacy."—The United States and National Dispensatories. — Hager's "Technik der Pharmaceutischen Receptur."—Hager's "Handbuch der Pharmaceutischen Praxis."—Bernatzik, "Arzneiverordnungslehre," vol. i. Many others could be mentioned, but the above will probably cover the ground sufficiently. Prof. J. P. Remington is preparing a work for publication, which will probably combine the best features of the leading works now in existence.

No. 1,515.—**Family Dyes** (W. F. S.).

Your question regarding the composition or nature of the special dyes you mention can be answered by stating that, to the best of our knowledge, they consist of various aniline or other coal-tar colors, suitable for immediate use, and not requiring complicated processes of mordaunting, etc. We did not mention the name of the dyes you specially inquire about, as there are others in the market of the same nature, and all are derived from the large aniline dye-works of Europe. Besides, we are unable to say what grade or quality this particular firm uses. By submitting a sample to an expert dyer, or dealer in dyes, you will probably obtain the desired information.

No. 1,516.—**Removing Vegetable Coloring Matter from Alcohol** (Green, Wis.).

This correspondent writes:

"I have a quantity of alcohol which has been used for percolating Senna leaves to remove the griping principle previous to making a fluid extract. How can I remove the coloring matter, *without* distillation, so that the alcohol may be used in liniments, or (if suitable) in tincture of arnica, etc.? Charcoal does not answer the purpose; is there any simple process for accomplishing this?"

In reply, we have to say that there is none. Our correspondent's object evidently is to merely get the alcohol colorless, without caring whether it still retains in solution any extracted matters. Yet there is no way to accomplish this short of distillation. Surely this is a simple operation, and requires but little apparatus and skill.

No. 1,517.—**Cleaning Bottles which had Contained Essential Oils.**

These are best cleaned by first rinsing them once or twice with a little alcohol or tincture of soap-bark (made with strong alcohol). Afterwards the bottle is rinsed with water, and a little permanganate of potassium (about two drachms for a pint bottle, in some cases more) is added together with some hot water and a little hydrochloric acid. The bottles are well shaken and then rinsed with water. This may be repeated.

Or, after the alcohol has been poured out, and the bottle has been rinsed, a solution of hyposulphite of sodium is added, and then a little hydrochloric acid. This generates sulphurous acid gas, and sulphur is precipitated. The mixture is well shaken about, and the bottle then rinsed with water. It will generally be found that a fine film of the precipitated sulphur adheres to the inner walls of the vessel. This fine deposit must be removed with the aid of a bottle brush, or by shaking shot or fine gravel about in the bottle.

The alcohol which has been used for rinsing the bottles may be utilized for any ordinary purposes.

No. 1,518.—**Paper Bottles** (C. H. B., New York).

This correspondent desires to know whether anybody makes or intends to make, in this country, the paper bottles recently put on the market in Germany, which were described in recent issues of this paper.

Perhaps some of our readers can supply the information. It would probably suit our correspondent equally well if he could be supplied with the name of an American firm, having the foreign-made bottles for sale.

No. 1,519.—**Bay Rum** (Subscriber).

1. For *one* formula, we refer you to the U. S. Pharm., 1880, page 310, the ingredients of which are:

Oil of Myrcia	16 parts.
" " Orange Peel	1 part.
" " Pimenta	1 "
Alcohol	1,000 parts.
Water	782 "
To make	1,800 "

2. *Another formula:*

Tincture of Bay leaves (1 of Bay leaves, 20 of alcohol)	6 oz.
Oil of Bay	1 fl. ʒ
Borax	1 oz.
Carbonate of Ammonium	1 oz.
Rose-water	1 quart.

(This is from a European source, and yields a product much differing from the genuine, but quite pleasant.)

3. *Another:*

Oil of Bay	10 fl. ʒ.
" " Pimenta	1 fl. ʒ
Acetic Ether	1½ fl. oz.
Alcohol	12 pints.
Water	6 pints.

Macerate two weeks, then filter.

4. *Another:*

Although *fresh* bay leaves are used in the West Indies in the preparation of the genuine bay rum, the dried leaves may probably be used with equal results. It would be worth while to make a trial, macerating the leaves (dry, but still as recent as possible) in rum, or to allow them to be present during the fermentation of the saccharine liquid from which rum is distilled, and then to distil the spirit over.

5. *Another:*

Oil of Bay	1 fl. drch.
" " Bergamot	2 fl. drch.
Jamaica Rum	16 fl. oz.
Deodorized Alcohol	4 pints.
Water	3 pints.

Dissolve the oils in the alcohol, then add the rum, and lastly the water. Add to the mixture about 4 oz. of precipitated phosphate of calcium, shake well, and filter.

No. 1,520.—**Addendum to Query on Mathematical Chemistry** (Th. P., Louisville, Ky.).

We have the following note before us: "I notice in your answer to query No. 1,472 (Mathematical Chemistry) in April number, that you obtain 2942.4 as the result of the equation:

$$648 : 872 = 2187.5 : x$$

while my result is 2943.6.

Furthermore, why do you advise him to use the equivalent of absolute quinine, a substance not used in practice or obtainable, unless he subjects quinine to a heat of 257° F.? In case he desires the officinal article, he will only require 2523.46 grs. of sulphate according to the equation:

$$756 : 872 = 2187.5 : x$$
$$x = 2523.46."$$

Our correspondent is correct in his first statement. The result should have been 2943.6, instead of 2942.4, and we thank him for the correction.

Regarding the second point, we must say that we do *not* advise him to use the equivalent for pure quinine. The original query contained, among other problems which we asked to show how to solve, the following (see April number, page 76). How much sulphate of quinine will be required to furnish 5 av. oz. of pure quinine? We might have interpreted this to mean hydrated quinine (with 3 molecules of water), but we were equally justified to think that he wanted, for theory's sake, absolute quinine, and we reckoned the problem on this basis. If our correspondent understands now the method of calculation, he will be fully capable of calculating the corresponding value for hydrated quinine, in the same manner as the present correspondent has done.

No. 1,521.—**Gold Paint** (J. Bros., York, Neb.).

A formula is asked for a "gold-paint such as painters use for gilding by means of bronze powder. If the powder is mixed with varnish, its lustre is deadened."

Not only does varnish deaden the lustre when it is mixed with the bronze powder, but the same thing happens when varnish is painted over it. The best material to use is oil of turpentine mixed with just enough boiled linseed oil to tint it yellow. The bronze powder is mixed with this liquid in a clean cup, and applied with a clean brush on the required place, which should have been previously painted and become dry.

The bronze paint commonly met with in fancy-goods stores consists of a bottle of bronze powder accompanied with a bottle of what seems to be benzine. The two are mixed a few moments before use, and the fluid portion evaporates almost immediately on its exposure to air.

No. 1,522.—**Solution of Hypophosphite of Iron** (L. T., Read's Landing, Minn.).

This correspondent says: "I have tried to make after the N. Y. and Brooklyn Formulary, the liquor ferri hypophosphitis, No. 65. I dissolved the sulphate of iron and ammonium in 8 fl. oz. of water and the hypophosphite of sodium, separately, in the same quantity of water. I then mixed them, and let them stand over night, and in the morning filtered. The residue was a slimy mass weighing about 20 grains. I washed this with 10 fl. oz. of water and expressed the balance remaining on the filter. On opening the latter I found—nothing. Can you tell me where the fault lies? Is there not too much water? Both the salts could be dissolved in a less quantity. I bought mine of a good reliable house and do not think they were impure."

We do not know what might have been the cause of the failure of the formula in our correspondent's hands. There may have been, perhaps accidentally, an excess of either salt, for the precipitated hypoposphite of iron would be redissolved in either case.

All true hypophosphites are soluble in water. The particular iron salt in question is, however, probably (at least in part) a basic salt, and it is this property which makes it so little soluble in water. We can hardly suppose that our correspondent used the *green* double salt, ammonio-ferrous sulphate, which is used as a developer by photographers.

While we cannot, for the present, point to the exact cause of the trouble, we can, on the other hand, suggest improvements of the working formula which we have ourselves adopted long ago. We will give the whole

formula with the modified directions:

Sulphate of Iron of Ammonium (U. S. Ph. '80)	924 grains
Hypophosphite of Sodium	608 "
Citrate of Potassium	600 "
Glycerin	1 fl. oz.
Water, enough to make	6 fl. oz.

Dissolve the sulphate and the hypophosphite, each in 8 fl. oz. of the water and filter each solution. Then, under constant stirring, pour the hypophosphite into the iron solution, stir thoroughly for a few minutes until the mixture forms a homogenous white milk, and transfer it to a well-wetted piece of moderately dense muslin. Rinse the precipitating vessel with about 2 ounces of water, twice in succession, and pour the washing on the strainer. When all the liquid has passed through, gather up the strainer into a bag twisted at the neck, and gradually apply pressure with the hand until as much of the liquid has been expressed as possible. Now transfer the precipitate to a mortar, add the citrate of potassium, and triturate until a smooth paste results. Next add the glycerin, and gradually, while stirring, enough to make the product measure six (6) fluid ounces. Filter, if necessary, and keep the solution in small, well-corked vials, which should be completely filled. (Large quantities may be kept in stock-bottles, with a thin layer of olive oil poured on top.

Formulas asked for:

1. Woodward's Vegetable Liver Renovator. 2. Dupenco's Female Pills. 3. Graeffenberg Company's (Marshall's) Uterine Catholicon.

BIBLIOGRAPHY.

AMERICAN MEDICINAL PLANTS: An Illustrated and Descriptive Guide, etc. By MILLSPAUGH. New York and Philadelphia: Boericke & Tafel, 1885. Fascicle II. (parts 6 to 10) 4to. $5.00.

THE first portion of this work by Dr. Millspaugh we have already noticed. This portion contains, like it, 30 plates and the accompanying text to describe the following plants: *Abies Canadensis, A. nigra, Actæa spicata, Apocynum cannabinum, Arum triphyllum, Caltha, Carya alba, Caulophyllum, Cephalanthus, Cypripedium pubescens, Dirca palustris, Equisetum, Fagopyrum, Gelsemium, Geranium maculatum, Geum rivale, Hepatica, Juglans cinerea, Mitchella, Œnothera, Podophyllum, Pulsatilla Nutalliana, Ranunculus acris, Scrophularia, Senecio, Taraxacum, Thuja, Trillium pendulum, Viola tricolor, Zizia.*

The plates are printed in color, from drawings from nature, and embrace indigenous plants employed in homœopathic practice. The text gives the classification of each specimen; the synonyms; a description; the history and habitat; the part used and its preparation; the chemical constituents, and the physiological action of the drug. Each fasciculus is inclosed in a handsome paper-covered portfolio, having inside the cover an index to its contents.

This work is exceedingly attractive, and those pharmacists who desire to make use of botanical plates as window decorations, as well as those who wish a work relating to American medical botany, will find it very desirable.

OFFICIAL REGISTER OF PHYSICIANS AND MIDWIVES now in Practice to whom Certificates have been Issued by the STATE BOARD OF HEALTH OF ILLINOIS. 1877–1884. Chicago: W. T. Keener, 1884, pp. 324, 8vo, muslin. $1.50.

THIS is in every respect one of the most complete medical registers possessed by any State in the Union. It contains a variety of matters of interest to the profession, such as the laws and regulations governing the practice of medicine in the State, the decisions that have been rendered, list of revoked certificates, necrological record, directory of medical societies, and indexes of physicians, towns, and midwives, a country list of pharmacists, etc., etc. The book is altogether a very valuable publication, not only for physicians practising in Illinois, but as a correct list of many thousands of physicians whose addresses may be serviceable for advertisers.

PATIENT.—You blockhead! You have pulled a sound tooth!
DENTIST.—That's no matter. You should be glad that it is out before it makes you trouble.—*Fliegende Blätter.*

MICRO-CHEMISTRY OF POISONS, including their Physiological, Pathological, and Legal Relations; with an Appendix on the Detection and Microscopic Discrimination of Blood: Adapted to the use of the Medical Jurist, Physician, and General Chemist. By THEODORE G. WORMLEY, M.D., Ph.D., LL.D., etc. With ninety-six illustrations upon steel. Second edition. Philadelphia: J. B. Lippincott & Co., 1885, pp. 784, Roy. 8vo, muslin, $7.50.

FEW persons in this country who have occasion to study the literature of toxicology are not familiar with the first edition of Prof. Wormley's work, and its value as a reliable authority is everywhere conceded. In the preface to this edition the author remarks that it has undergone thorough revision, and is much enlarged in matter, especially by the addition of illustrative cases, largely American, and by new tests and methods of recovery of poisons from organic mixtures; and also, by the addition of an entirely new chapter on gelsemium poisoning, and an appendix on the nature, detection, and microscopic discrimination of blood. Among other subjects added are poisoning by potassium chlorate, post-mortem diffusion of arsenic, arsenic in medicines, in fabrics, and in glass; Dragendorff's method for the recovery of vegetable principles; nature of ptomaines, and the preparation, properties, and recovery of jervine. The chemical nomenclature has also undergone revision.

THE MEDICAL DIRECTORY OF CHICAGO (including Cook Co.) for 1884–5. Edited by ROBERT TILLEY, M.D. Chicago: W. T. Keener, 1884, pp. 179, small 8vo.

THIS contains copies of the medical laws in force relating to the practice of medicine, dentistry, and pharmacy; the national codes of ethics; information relative to National and State medical, dental, pharmaceutical, and hygienic associations; the charitable institutions in the State; colleges and medical periodicals; benevolent societies; and lists of physicians, dentists, and pharmacists in the city of Chicago and in the county, with the credentials, telephone number, and office hours of the former, and the addresses of all. It is compact, comprehensive and complete.

HAND-BOOK OF DISEASES OF THE SKIN. Edited by H. VON ZIEMSSEN, M.D., etc. Illustrated with eighty wood engravings and color prints. New York: William Wood & Co., 1885, pp. 685, Roy. 8vo.

THIS work is presented by the publishers to all who subscribe for the original series of Ziemssen's Cyclopædia. It is a beautiful piece of wormanship, and creditable to all concerned in its production. Ten of the leading German authorities contribute the various chapters, which are often illustrated with plates in two colors.

ANLEITUNG ZUR HERSTELLUNG von Liqueuren, Aquaviten, Cognac, Rum, Arac and andern Getränken aus ätherischen Oelen und Essenzen. Von E. Sachsse & Co., Leipzig (1885).

THIS is a series of 300 practical formulæ (covering 76 pages) for preparing all kinds of liquors artificially. The firm prepares and sells a large number of stock-essences, for preparing the various kinds of liquors, and most formulæ direct the employment of these. The preface contains general instructions and practical directions regarding the ingredients and manipulation.

COCAINE HYDROCHLORIDE as the name of the salt formed by Cocaine with Hydrochloric Acid, and a discussion on the Nomenclature of Alkaloidal Salts in General. (Reprints from the *Weekly Drug News*, embracing letters from many eminent chemists), 12mo. New York: Druggist's Circular Press, 1885.

ITEMS.

Dr. Hugo Trommsdorff has retired from the well-known firm of manufacturing chemists at Erfurt, and the business will be continued, under the old firm-name "H. Trommsdorff," by Dr. Eugen Ostemayer, Clemens Lageman, and Dr. Oscar Brenken, with Leo Vosen in Aix-la-Chapelle as special partner.

The Index Medicus will hereafter be published by Mr. George S. Davis, of Detroit, Mich., and the first number of this year will contain the parts of January, February, March; the remaining parts will be issued monthly, as formerly. Drs. Billings and Fletcher will continue to edit it, and the price will be $10.00 per year, unless it is sufficiently well patronized to warrant a reduction, in which case those who subscribe the full amount will have the difference credited as a subscription in advance for the following year.